COLLIERY

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COAL AGE

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R. DAWSON HALL, *Engineering Editor*

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Increasing Revenues by Decreasing Breakage

DEGRADATION is the bugbear of many operators. At many mines all profit—if there is any—is made on the lump size. This grade therefore must "carry" the smaller sizes and sometimes the load is heavy. Various expedients have been tried to lessen the degradation occurring in the mine product between the face and the railroad car, or even between the face and the coal's ultimate destination. Next week *Coal Age* will contain an article showing how the installation of a retarding conveyor decreased the degradation occurring in the mine product. Over five per cent more lump was realized with the new arrangement than had been secured with the older type of equipment. Such an increase in lump would mean an appreciable increase in the revenues derived from the total output.

Pictures Tell the Story

EVERYBODY likes to look at pictures and they frequently tell a story that type cannot tell. Next week therefore, *Coal Age* will contain a "picture story" covering the developments and construction work at one of the new Island Creek mines in West Virginia. Because of the narrow deep valleys there encountered, it became necessary at this operation to culvert a small creek for a distance of several hundred feet. Power machinery was extensively used not only in this work but in many of the other construction jobs that had to be done. So far as this is concerned, however, mechanical energy is largely supplanting human effort throughout all industry everywhere, mining included.

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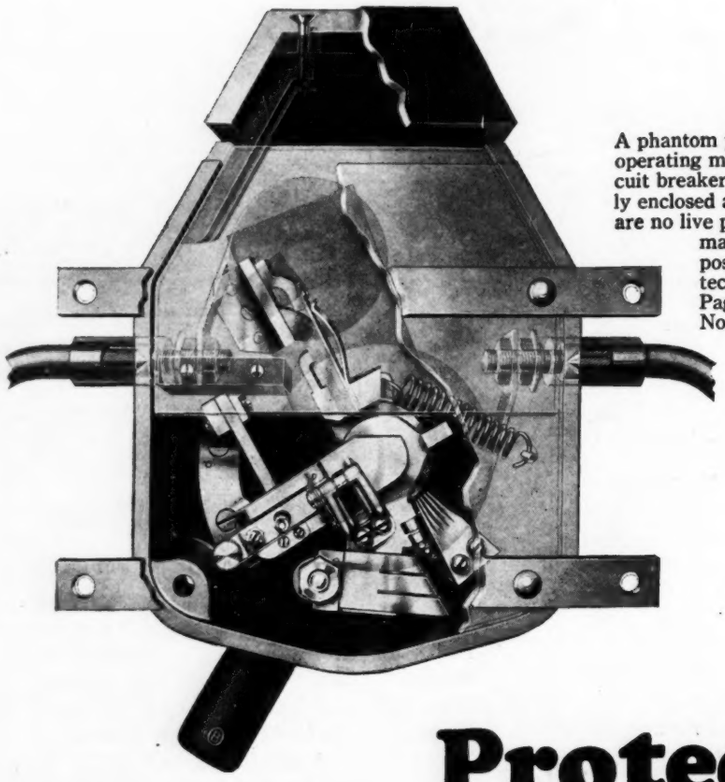
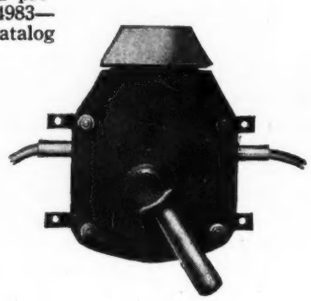


A phantom photograph showing operating mechanism. The circuit breaker switch is completely enclosed and insulated. There are no live parts exposed. Automatic in action, giving positive overload protection. No. 14983—Page 506, O-B Catalog No. 20.



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AS YOU increase your mine workings, do you take the chance of extending your trolley and equipment circuits beyond the point where your substation breakers can offer any certain protection from overload or short circuits?

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Has it paid? Their production says—"Yes!"

Booklet No. 50M covers this phase of protecting operation very thoroughly. It contains many ideas that will be of help to you in plugging production leaks through non-operative equipment. A copy of this booklet will be promptly sent at your request.

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R. DAWSON HALL
Engineering Editor

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Enter the Stop Watch

A FEW DAYS AGO the manager of the engineering department of a large company was observed consulting a watch of peculiar appearance. Upon inquiry he explained that it is a high-grade timepiece having a stop-watch attachment. He said that frequently while visiting the plants he had needed a stop watch but did not like to carry two watches so secured a "combination," and now has a stop watch wherever he goes.

It would speak well for the coal mining industry if more superintendents and engineers were to carry stop watches. The increasing degree of mechanization and consequent higher investment in equipment has made it necessary to time operations in seconds and fractions thereof rather than in minutes.

As an illustration, the dumping-and-loading period of the hoisting cycle is known accurately at but few shaft mines. That such information may be of great value is attested by the fact that recently the hoisting capacity of a 3,500-ton mine was increased a needed 10 per cent by inexpensive changes which cut the dumping-and-loading period from 4¼ down to 2¼ seconds. This is getting down to stop-watch fineness.

Mechanical loaders costing up to $12,000 each and working but a few hours out of the twenty-four need the stop watch as an auxiliary. An accurate time study is the first step in cutting avoidable delays and securing that increase in daily tonnage which is necessary to realize maximum profit from the investment.

District Agreements

IN 1920, and again in 1922, the end of the Central Competitive Field as a wage-making unit for the bituminous coal industry of the United States was fittingly lamented by a few dry-eyed mourners. Subsequent developments, alas, made their elegiacs somewhat premature. This year, however, it really looks as if the demise of the four-state group is an accomplished fact. Forecasts of its passing were current in advance of the Miami conference. The seal of approval later was set on the dissolution by the policy committee of the United Mine Workers. One separate agreement already has been negotiated.

This disappearance—if disappearance it turns out to be—of an old landmark is not an unmitigated tragedy. Created in the first instance out of common necessities, even in its earlier days the Central Competitive Field was not immune to temporary partition and now, in the light of changing production trends, it appears to have outlived its usefulness. The internal competition which moved the operators of this field to unite to save them from themselves no longer dominates. No good reason, therefore, exists to keep them together if disunion will enable them to compete more effectively. Sentimental regard for mere venerability does not justify the preservation of an outworn institution.

The success of the new movement, of course, hinges upon the breadth of vision which both sides display in negotiating district agreements. If, for example, the willingness of the United Mine Workers to consent to such agreements is only a cover for the old strategy of "divide and rule," nothing constructive for either the union or the producers can come out of it. If, on the other hand, operators in each district think that here is a chance to retain any individual advantages they may have won over their fellows in the long years of the four-state grouping while ridding themselves of all the disadvantages inherent to the old system of close differential relationships, they are proceeding upon an unsound basis.

The demand for district settlements is a recognition that the interrelationships upon which the Central Competitive Field adjustment was built no longer meet existing conditions. To hold, therefore, as has been done in some discussion of the scope of the recent decision of the union policy committee, that the adjustment reached in one district necessarily must be the pattern into which adjustments for the other districts must be molded would defeat the real purpose of the proposed separate agreements. The slate should be wiped clean for an unprejudiced examination of the situation in each district and contracts framed to satisfy the necessities of the operators and the rights of the miners in each district.

Such an approach to the problem places a heavy burden upon the leadership of the conferees. It sounds a challenge to constructive thinking which they should be eager to accept—even at the price of the abandonment of cherished traditions. It calls, too, for a nice sense of discrimination and the courage to give full play to that sense. Above all it demands that mutual confidence take the place of the mutual suspicion which now seems to animate the reactions of both sides. Without this trust the road to peace lies through a war of economic pressure with starvation and bankruptcy the weapons of attack. Surely the bituminous coal industry of 1927 is too big to want to do battle on those terms.

Still in the Dark

THE RECENT DECISION of the Supreme Court of the United States in the *Claire Furnace Co.* case is a keen disappointment to a business world which has been waiting nearly seven years for an official clarification of the powers of the Federal Trade Commission to inquire into the costs, profits and other intimate details of American industry. The opinion of Chief Justice Taft reversing the decree of the lower court on a fine point of technical procedure leaves the twilight zone of federal bureaucratic inquisitorial rights as dim as it was when the steel interests and the Maynard Coal Co. first challenged the legality of the Federal Trade Commission's orders.

Laymen, of course, will hesitate to dispute the law

as thus expounded by the court. Nevertheless, as a practical matter, the decision would seem to put the business man at a decided disadvantage. Instead of appealing, as was done in this case, to enjoin the Commission, the court says his only course, if he thinks the Commission is acting beyond the scope of its lawful authority, is to decline to comply with the Commission's orders and so compel that body to appeal to the Attorney General to institute mandamus proceedings. Whether such proceedings are started is discretionary with the Attorney General.

Such a method puts industry in a double jeopardy. Under this plan of procedure business runs the risk of incurring the penalties provided for non-compliance with the Commission's orders. Lodging discretionary power with the Attorney General in effect makes that official a court of first instance in passing upon the legality of the Commission's actions without giving the business man the protection or guidance that would be had in the decision of a court of record. This may, as the opinion suggests, relieve the courts of considerable work, but it is hardly comforting to industry.

Criticism of the courts is not a pleasant task. In this case, however, it is fortified both by the fact that the court twice ordered the fundamental question of the Commission's powers argued before it and by the dissenting opinions of Justices Brandeis and McReynolds. The latter, after bluntly stating his belief that the orders under attack went beyond the powers of the Commission, expressed the view that "it is now much too late for this court first to set up and then to maintain the defense of lack of jurisdiction in the trial court. I cannot acquiesce in the disposition of the cause on that unstable ground."

There is nothing academic in the interest of the business world in the fundamental question involved in the *Claire* and *Maynard* cases. How far government bureaus may go in compelling the filing of regular and special reports from private business is a vital issue. Certainly in view of the long delay in deciding the *Claire* case there was ground for a reasonable expectation that the decision when handed down would throw much light upon the question. That it does not must be greatly regretted.

Before or After Loading?

HOW MUCH is a satisfied customer worth to a coal producer? To what extent does the treatment accorded coal at the mine affect its breakage or degradation in railroad transit? These are questions that beset every mine operator, yet their solutions, particularly that concerning transit degradation, have not as a rule received the care and attention that their importance warrants. Transit breakage has constituted the bone of contention in many misunderstandings between consignor and consignee. Naturally the mining man is anxious to make his proportion of lump as large as possible but too gentle treatment of the coal during preparation appears in some cases to entail evils which rough treatment avoids.

As affecting its own particular case one large operating company in southern West Virginia is of the belief that a satisfied customer is worth an appreciable sacrifice in the percentage of lump shipped. Experience has shown that transit breakage or that sustained in railroad transportation is much lower in coal that has not been coddled during preparation.

This company has two mines operating in the same bed. At one every facility for careful handling of the mine product is available and a high percentage of lump is shipped. At the other the coal is treated in the roughest fashion with a resulting low proportion of large sizes. Practically all consumer "kicks" because of fines in cars of lump as received by the customer refer to shipments from the mine first mentioned. The conclusion drawn is that at the second mine all weak or cracked lumps are broken before the coal reaches the railroad car. Furthermore, all sharp corners appear to be worn off of the larger pieces by attrition.

It is, of course, questionable how many coals would show a similar result under like circumstances, but it would seem that the practical results of any preparation process could be predicted with a fair degree of certainty from data secured from comparatively simple tests. Perhaps it would pay every producer to develop handling-breakage curves, for the coal from each of his mines, in accordance with some standard method. Such curves might constitute a valuable guide in reaching a decision regarding contemplated expenditures for equipment intended to reduce degradation.

In the Forefront of Progress

AT THE RECENT stockholders' meeting of the U. S. Steel Corporation, Judge Gary spoke at some length of the future plans of the company. Among other things, research will form an important, even though it be a small, part of the company's future activities. For this work the services of one of the foremost physicists in the world has been obtained. Not only are methods of steel manufacture to be studied, but coke making, the immediate end sought being an increase in the quantity of oils yielded. As stated, this will cost money—lots of money—but all of it and more will eventually return to the coffers of U. S. Steel and to the pockets of its stockholders.

The steel corporation, possibly to a greater extent than any other similar organization in the world, has never shied at anything that was new. On the contrary it has deliberately sought out new processes, methods and materials and unhesitatingly adopted them not because they were new but because they were advantageous and would make or save money.

Thus it has never hesitated to scrap perfectly good equipment whenever, and as soon as, something else was developed that was better or more efficient. It is said that much of its machinery is amortized on a five-year basis, the idea being that in all probability within five years from the date of purchase such improvements will have been made that those types which today represent the acme of perfection in five years' time will be obsolete.

It takes courage to follow such a policy, but it pays handsomely in the end. Only by using machinery to its maximum capacity and discarding it as soon as it has served its period of usefulness—not necessarily when it is worn out—can greatest returns from it be realized. This, however, has been the unswerving policy of the U. S. Steel Corporation throughout its entire career. It is interesting to note that it has been almost phenomenally successful in its business and that today the acumen and astuteness of its guiding spirits are recognized and respected throughout the entire world.

Latest Improvements in Generating Equipment Save 40 per Cent of Power Costs

Big Turbine Unit Brings Company's Generating Capacity to 50,000 kva.—All Available Appliances Used to Conserve Heat and Release a Salable Fuel Product to the Market

By C. Raymond Seem* and Edgar Gealy†

WHEN THE LAST TURBINE was installed in the Nanticoke Power Plant of the Glen Alden Coal Co. it increased the generating capacity of the whole electric system of the company to 50,000 kva. Previous to its installation the Nanticoke plant consisted of one 10,000-kva. turbine, two 5,000-kva. units, and a small 500-kva. house turbine. The addition of the last turbine, a 15,700-kva. machine, increased the capacity of this individual plant to 36,200 kva. The Nanticoke plant is tied into a power system consisting of three other mine power-generating stations owned by the company and located at Hampton, Storrs and Woodward respectively. The Hampton plant houses one 5,000-kva. unit and two 2,500-kva. machines, all operated at 150-lb. steam pressure and 150 deg. of superheat. At Storrs, there is one 2,500-kva. turbine operating on 135-lb. pressure and 100 deg. superheat. The Woodward plant has a 1,000-kva. low-pressure turbine which receives steam from nearby hoists and fan engines. The curves set forth in Fig. 1 showing the increase in load taken by these plants are quite interesting. For the last ten years the total electrical energy consumed by the company has increased at a rate exceeding 9,000,000 kw.-hr. per year. During 1926 the total energy supplied by the company's power system, to its fourteen mines, reached the enormous figure of 140,000,000 kw.-hr. This gives the owning company a place among the hundred largest public utility systems of our country.

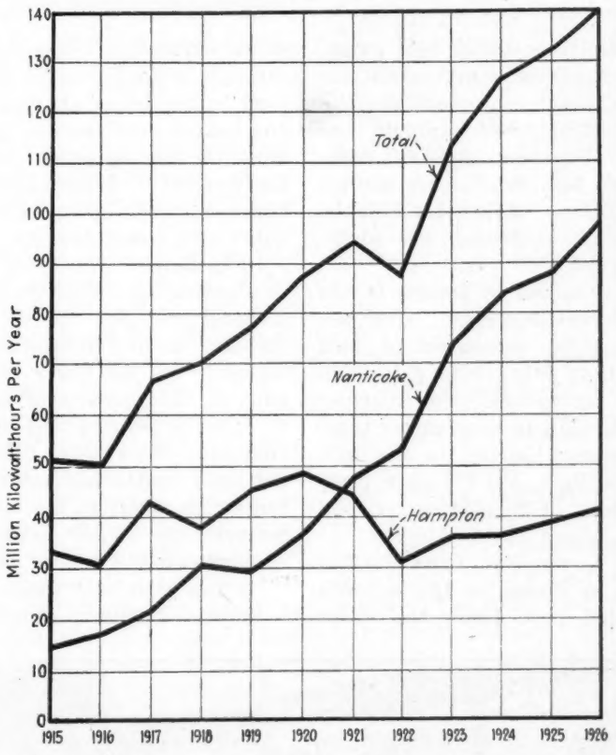

Fig. 1—Mine Load Increases 9,000,000 Kw.-Hr. per Year

During the last ten years the output of the Glen Alden company's plant has increased 90,000,000 kw.-hr. The total generating capacity now in service is 50,000 kva.

Although the company is quite highly electrically equipped and one would think that additional generating capacity were not needed, the daily load curve of the electrical system shown in Fig. 2 reveals the fact that the last turbine was really urgently necessary. Conservative estimates also show that because of the rapidly increasing demands for new applications of electric drives the company will continue to use electrical energy at an increasing rate.

Based on the company's output 14 kw.-hr. of electrical energy are consumed per ton of coal shipped. For the whole anthracite field, if all coal companies were using the same quantity of energy per ton this would represent an annual power consumption of approximately 1,500,000,000 kw.-hr., which is as much as some of the very largest public utility electric systems in the land are producing per year. Considering the rapidly increasing requirements for electrical energy, the Glen Alden Coal Co. decided, when it built the latest addition to its plant, to provide ways and means for unlimited expansion of the installation. Furthermore, the officials in charge of the work wished to incorporate every modern means whereby their electrical energy might be developed at as low a cost as possible, paralleling the practice of even the most modern utility companies. Although the steam pressure used on the new turbine is not the highest now utilized in this type of machine, the company selected 250 lb. as the most economical pressure for the conditions at this plant. Whereas the older turbines at the Nanticoke plant use 150-lb. pressure at 150 deg. superheat, the new turbine operates with 250-lb. steam pressure at 150 deg. superheat. The new turbine also has two points of stage bleeding.

Five Stirling boilers, having 6,675 sq.ft. of heating surface each, supply steam to the new turbine. The boiler house, however, is built of sufficient length to accommodate seven boilers and the coal bin is arranged for another row of seven boilers on the other side of the present aisle. Fig. 4 shows three of the 12x17-ft. Coxe chain-grate stokers and the Stirling boilers served by them. Some idea of the success of the new equipment can be gained from the fact that it represents

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†Editorial staff of *Coal Age*, New York City.

a saving in operating cost equivalent to about 41 per cent as compared with the 150-lb. pressure equipment in the old part of the plant. Every modern means is employed in the new boiler plant to obtain the highest possible economies. Only barley No. 2 coal is used and by relying entirely upon this fuel, which actually has no market, the company has released about $100,000 worth of barley No. 1 fuel for the market annually. More than $600,000 worth of barley No. 1 is released for sale by all the company's turbine plants combined. All the equipment in the new plant is electrically-operated excepting one steam-driven boiler-feed pump. This arrangement permits ideal operating conditions because the furnaces, boilers, draft equipment and the like, are automatically controlled. For example, the stokers are motor-operated, and their speed is regulated in such a manner that best results are always obtained. The blowers, drafts, and temperatures in the fire boxes are also automatically controlled, the equipment therefor being interlocked.

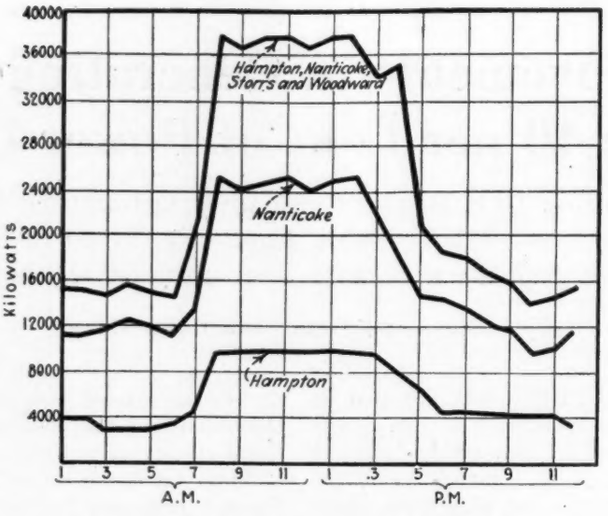

Fig. 2—Daily Load Curve Passes 37,000 Kw.

This load diagram shows the all-day power requirements of fourteen mines. The Storrs plans has a steady load of about 2,000 kw. in the day time and the Woodward plant a load of about 750 kw. between 7 a.m. and 4 p.m.

Balanced draft control is obtained by means of the Engineers Co. pressure differential device. A Copes boiler-feed regulator controls the admission of feed water. Connery steel breeching fitted with expansion joints is used in the stack connection. The Stirling boilers are of the four-drum, built-in economizer type.

A typical cycle of feed-water heating in the new plant at the most economical load, 250 lb. gage pressure and a vacuum within 1 in. of the barometer, and with 150 deg. of superheat, might be of interest.

Condensate at 79 deg. F. is removed from the hot well of the main condenser by means of the hot-well or condensate pumps, situated 7 ft. below the water level in this reservoir. The condensate is pumped first to the inter-condenser of the air ejectors for the main unit, where its temperature is raised from 79 to 84 deg. From here it goes to the low-stage heater which takes its steam from the low-pressure bleeder nozzle of the turbine. Here the water is heated to 148 deg. The next heater is the after-condenser of the ejectors. In this small heater the water picks up 10 deg. more. It now has a temperature of 158 deg. and passes to the vent condenser of the combined high-stage heater and de-aërator shown in Fig. 5. In this unit water enters the upper heating chamber, passing first through a float control valve regulated by the water level in the lower chamber. The water is distributed and heated over cascade pans in the presence of steam from the high-pressure bleeder nozzle, precisely as in the conventional open-type of feed-water heater, this upper chamber being entirely filled with pans for this duty. No water storage whatsoever is here provided.

Immediately below this heating compartment is the de-aërating and storage chamber, the water passing directly from the upper to the lower without control, through a line containing the auxiliary jet steam syphon. In the lower chamber it again passes over pans in the presence of an air-free atmosphere and is thereby de-aërated and stored in the bottom of the chamber. This lower compartment performs no heating duty and consequently causes no condensation of the steam admitted to it. In the heating chamber the temperature of the water is brought up to within approximately 2 deg. of the steam temperature, exactly as in the open feed water heater.

In the auxiliary ejector steam syphon sufficient

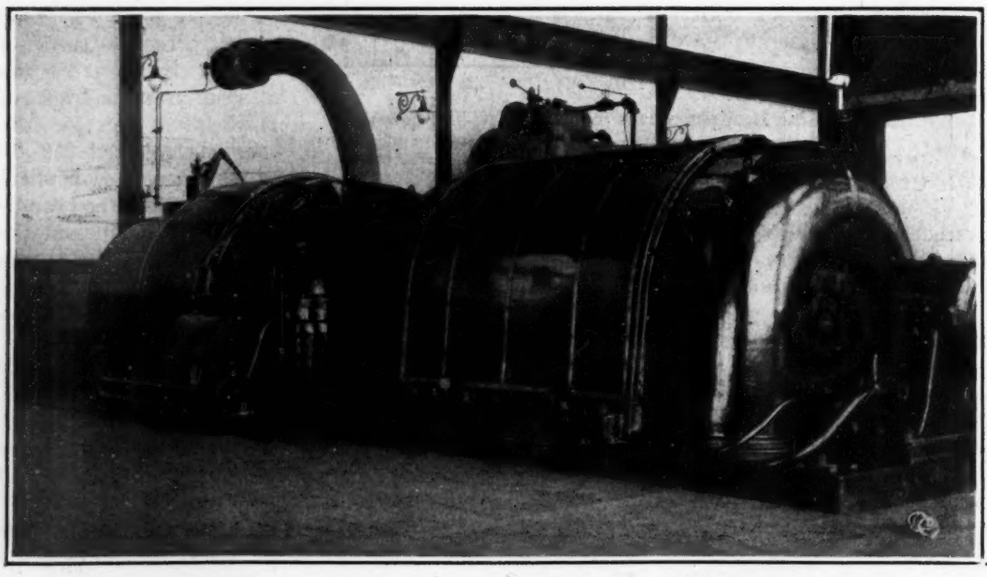

Fig. 3—The Latest Turbine

Two bleeding points are provided on this turbine so that its efficiency is as high as it is possible to attain by the most modern and approved means. The steam pressure is 250 lb. at 150 deg. of superheat.

steam is used under a differential pressure to raise the water temperature this additional 2 deg. and overcome the depression due to the operation of the heater with steam of high initial dissolved air content. Water will, therefore, enter the lower chamber from the intermediate connecting piping at the temperature of the steam.

Steam for heating enters the lower de-aërating chamber under a substantial gage pressure and circulates around the pans, subsequently passing through the connecting piping to the upper chamber where it serves as a heating medium.

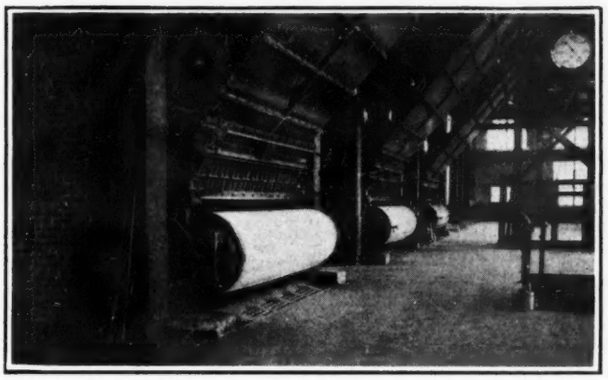

Fig. 4—These Modern Stokers Burn Only Barley No. 2 Fuel
Five automatic stokers like the ones in this view serve the boilers. Only barley No. 2 fuel is used. This is a grade that is unsalable.

A differential pressure valve is installed on the inlet to the heating chamber and provides sufficient differential pressure to operate the jet syphon when it is needed. Incidentally, it also prevents back-flashing of water by acting as a check valve should the turbine experience a sudden drop in load.

This heater is of the open type in which the steam and water come into intimate contact. All the other heaters are of the closed type, including a small vent condenser to recover the heat from the hot vapors from the high-stage unit. Each unit is drained to the preceding one of lower pressure back to the main hot well by means of water level traps and loop seals, each seal being of such diameter and depth that under no conditions of load or condensate will they pass water.

This heated water now goes to the feed pumps. These take it directly from the storage of the de-aërator in amounts determined by the feed-water regulators on the boilers. Several means are provided to maintain the proper water level in the storage. First, the boilers and turbine constitute a unit; therefore, the cycle is automatic, for as the load increases on the turbine, the available condensate increases, and the feed pumps give it to the boilers. In like manner the flow of bleed steam is automatic for it will only flow into the heaters in sufficient amounts to bring the water to its temperature, less the heater efficiency.

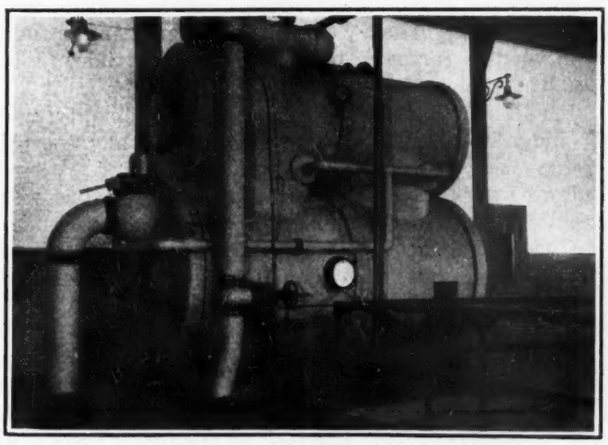

Fig. 5—De-aerator Increases Operating Efficiency
This apparatus, connected into the system for supplying feed water, performs an important function in reclaiming heat from steam bled from the turbine.

Second, the cycle is, of course, subject to time lag. It is therefore necessary to float a so-called surge tank on the system. This tank has sufficient reserve for 40 min. of full-load operation and is connected into the system just ahead of the low-stage heater, so that when using this water or rejecting it high-heat steam is not used. The tank is situated at an elevation just high enough to put water into the de-aërator under maximum pressure conditions. It, therefore, floats on the system and needs no pumps of its own. The control valve of the de-aërator determines whether it receives or gives up water.

Third, an emergency float valve in the de-aërator allows raw water to enter this storage from the high-pressure house pump in case the methods just mentioned fail.

Fourth, in case any one of these valves sticks in an open position, a 6-in. loop seal is provided as an overflow.

The success of this new installation has been so marked that when further additions to take care of the rapidly increasing mine load become necessary they will undoubtedly be modeled along similar lines. Judging from past experience, the necessity for such additions will soon become evident.

Federal Intervention Is Needless, Says Walter Barnum

The arguments for federal control of the bituminous mining industry would apply with equal force to other industries. The reliance upon governmental bureaus instead of individual initiative, the substitution of artificial regulation for the operation of natural economic forces, and, most of all, the intrusion of politics in a purely industrial field and one which the complexity of operation renders particularly unfit for bureaucratic control, could result in nothing less than impaired initiative, diminished productive effort and higher costs to the coal consumer. Proposed governmental interference with the bituminous mining industry is unjustified. This industry has proved itself capable of meeting any unexpected demands for its product by a rapid expansion of its operations; it has furnished the nation with an adequate and remarkably constant supply of fuel at the lowest mine price found in any country; it has been able to perform this service because of its readiness to adopt all mechanical devices and all improvements in methods which would lower its cost of production; it is devoting much attention to the development of more efficient ways of utilizing its product. An industry with such a record of past performance may be safely left free to work out its own problems and direct its own future development with the confidence that individual initiative and enterprise will, if unhampered by governmental interference, render the industry increasingly efficient.—*Walter Barnum, president, National Coal Association before International Bituminous Coal Conference.*

Careful Analysis of Compensation Claims Proves Beneficial to All Concerned*

Common-Law Defences Broken Down—State Laws Differ In Provisions but All Admit Workman's Right to Compensation—Both Parties Profit from Analysis of Records

By H. J. Harrington
Supervisor of Compensation, Union Pacific Coal Co., Rock Springs, Wyo.

ONLY a few years ago, the possibility of a workman being able to recover damages for accidental injury was extremely remote unless he could break down the common-law defense of contributory negligence, assumption of risk and the fellow-servant rule. Investigation in 1910 showed that only about 25 per cent of the workmen who were accidentally injured were able to recover damages, the remaining 75 per cent received no financial relief whatever, and, in addition, were compelled to bear the cost of litigation. It was also shown that, in cases where the employer had resorted to employers' liability insurance, the percentage of cases in which recovery was made was much smaller. With the advent of new legislation aimed to compensate workmen for all accidental injuries, regardless of whether the employer was negligent or not, known as workmen's compensation laws, the common-law defense was broken down. To fulfill the purpose for which they are intended, workmen's compensation laws must provide reasonable and quick payment of compensation; excessive administrative cost must be eliminated so that the largest proportion possible of the amount paid for protection by the employer will be available for payment of compensation to the injured workman. Investigation of claims must be thorough and fair, and the amount assessed against the employer for financing the fund must be kept within reason.

Proper care and treatment of so-called minor injuries is highly important. A careful review of accidents and mishaps shows conclusively that it is never well to conclude that because a wound is slight it is unimportant and may be neglected. Many and many a man about the mines is now handicapped by partial permanent disability solely because he failed to have a seemingly slight injury properly dressed and attended. When dealing with possible infection too much care cannot be exercised.

The various compensation laws differ somewhat as to occupations covered. Some provide compensation for occupational diseases. They differ in the length of waiting period and in the maximum and minimum amounts of benefits to be paid. In some laws, provision is made for lump-sum settlements for permanent partial disability, permanent total disability and fatal injuries; in others, payments are made in weekly or monthly installments. Some laws make it compulsory for the employer to contribute to the state fund; by others he may elect to carry his own insurance. Either of these plans is entirely satisfactory, providing that, in the latter case, proper provision is made to render it impossible for the employer to default in payment.

But, regardless of the difference in provisions of the various state compensation laws, as noted above, they all frankly admit that the workman has a right to be compensated for economic loss resulting from industrial accident.

As an employer do you give your compensation claims and payments made for your account, the attention to which they are entitled? Or do you after payment of your assessment treat this item as any other tax which you, as a good citizen, pay and then forget? If you do not give close attention to your claims and payments, you are overlooking a means of furnishing your safety and employment departments with valuable statistical knowledge. Well compiled records of claims and payments, and properly analyzed history thereof, will show whether or not your workmen are following the recommendations of your safety department in the care and treatment of injuries, especially those that are commonly designated as minor, or slight, in character. It will inform you of the cost sustained each year in compensation payments on account of neglect, through carelessness or ignorance, of these so-called minor injuries.

It will prove that there is always a considerable risk of a permanent disability growing out of these neglected minor injuries if they are allowed to go for any length of time without proper medical attention.

It will show you that a considerable number of awards are made each year in settlement of claims for disability resulting from neglected minor injuries. with a correspondingly heavy draft on the compensation fund, and, what is far more to be regretted, partial or total loss of function to the workman.

It will show whether any particular nationality, race or individual is subject to recurrence of any especial injury such as being incapacitated by lifting with resultant strain to back or sides; falls of persons with resultant sprains of fingers, hands, arms, and the like.

One item in particular, which is of interest to both the employer and the workman, is the amount of time lost due to accidental injury. A partial analysis of the history of 297 claims, for non-fatal accidental injury, which were settled for the account of one coal mining company during the past year is herewith presented. These 297 injuries resulted in the loss of 11,770 days and in addition to this loss of time the injured workmen suffered 13 permanent partial disabilities in various degrees.

The following types of injury "falls of coal," "falls

*From a paper entitled "Why We Should Be Interested in Workmen's Compensation," presented before the meeting of the Rocky Mountain Coal Mining Institute, Feb. 23 to 25, 1927.

of rock," "falling objects" and "loose coal" are chargeable with 117 of these injuries with a resultant loss of 6,130 days' time. This amounts to 40 per cent of the total number of injuries and 52.1 per cent of time lost. Three permanent partial disabilities also resulted.

The foregoing four types of injury are grouped for the reason that they are closely related. Separate analyses give the following results:

Falls of coal accounted for 53 claims with a loss of 2,935 days, or an average of 55.4 days per injury; also for 2 cases of permanent partial disability.

Falls of rock were responsible for 24 injuries with loss of 1,439 days, or an average of 60 days per injury; also for one case of permanent partial disability.

Falling objects were the cause of 24 injuries with the loss of 808 days, or an average of 33.2 per injury.

Loose coal accounted for 17 cases of injury with a loss of 948 days, or 55.8 days per injury and for one case of permanent partial disability.

SOURCES OF INJURIES ARE NUMEROUS

Other causes of injury and resultant loss of time are classified as follows: Animals, kicked by, 3 injuries, total loss of time 514 days, average loss of time per injury 171.3 days with 1 permanent partial disability; Animals, other, 1 case of injury with loss of 14 days; Chute irons, 2 injuries with loss of 44 days, or an average of 22 days per injury; Clothes hangers, 1 injury with 11 days' loss of time; Cave-in ditch, 1 injury with loss of 29 days; Derailments, 20 injuries with loss of 563 days, or an average 28.1 days per injury; Electricity, 1 injury with loss of 14 days; Falls of persons, 34 injuries with loss of 1,117 days, or an average of 32.8 days per injury and 1 case of permanent partial disability; Flying objects, 25 injuries with loss of 483 days or 19.3 days per injury with 2 cases of permanent partial disability. (Practically all injuries under this heading were inflicted on the eyes, the 2 cases of permanent partial disability being loss of vision) Handling coal, 3 injuries with loss of 138 days, or an average of 46 days per injury; Handling material, 3 injuries with loss of 80 days, or an average of 26.6 days per injury; Lifting objects and coal, 7 injuries with loss of 150 days, or an average of 21.4 days per injury; Low top, 3 injuries with loss of 63 days, or an average of 21 days per injury; Mining machines, 14 injuries with loss of 302 days, or an average of 21.6 days per injury, with one case of permanent partial disability; Mine cars and locomotives, 23 injuries with a loss of 886 days, or an average of 38.5 days per injury, with 2 cases of permanent partial disability; Mechanical loaders, 8 injuries with loss of 310 days, or an average of 39 days per injury, with one case of permanent partial disability; Mine lamps, 4 injuries with loss of 168 days, or an average of 42 days per injury; Nails in loose boards, 1 case of injury with loss of 30 days; Pushing cars, 5 injuries with loss of 121 days, or an average of 24.2 days per injury; Power drills, 3 injuries with loss of 109 days, or 36.3 days per injury; Ropes, main haulage, 4 cases of injury with loss of 79 days, or an average of 19.7 days per injury; Ropes, other, 1 case of injury with loss of 34 days; Railroad cars, 1 case of injury with loss of 79 days; Sliding in chute, 1 case of injury with loss of 50 days; Spragging, 5 injuries with loss of 126 days, or an average of 25.2 days per injury, with one case of permanent partial disability; Step in ditch, 1 case of injury with loss of 43 days; Tools in injured man's own hands, 1 case of injury with loss of 21 days; Tools in hands of fellow workmen, 3 cases of injury with loss of 62 days, or an average of 21 days per injury.

Close scrutiny, by the employer on his own account, of all claims for compensation by his workmen will far more than justify the additional expense incurred by such investigations. Meritorious claimants have nothing to fear from investigation of their claims and are, in fact, benefitted to a large extent thereby. They are by this means advised as to their rights under the law, are assisted in preparing and filing claims and in their presentation, are made to feel that the employer has an interest in their welfare beyond the mere payment of the compensation imposed by law. Furthermore, the feeling thus created among workmen and their dependents is of the most friendly nature, and the value, to the employer, of such contact is beyond estimate.

On the other hand, where workmen are inclined to malinger and take unfair advantage of the provisions of the law, the proper supervision of compensation payments will quickly eliminate this class of claimant. This type is unable to endure continuous observation, and the employer who provides close supervision of compensation payments will soon find himself freed from this class of workman.

It is not fair to burden the state board, or bureau, in charge of administration of the compensation fund, with the investigation of all claims. Awards are generally made on the sworn statement of the employer and the workman, and the employer should satisfy himself beyond doubt as to the merit of the claim before assenting to payment of compensation.

If the employer has only a few workmen, the constant personal contact between him and his men should eliminate any possibility of fraud except in cases of absolute collusion between the two. If a large number of workmen are employed, unless the employer provides for close investigation of claims, before assenting to payment of compensation thereon, he is liable to find himself the victim of numerous fraudulent claimants, together with actually becoming a party to their frauds.

Two Chief Methods of Abating Severity Of Refractory Service

It is generally believed that refractories must withstand more severe service in powdered-coal installations than in stoker-fired furnaces. This is probably due to the following factors: (1) Powdered coal can be burned with a low excess of air which results in high-flame temperatures; (2) all of the ash of the coal is carried in the gas stream, and a larger part may be sprayed on the walls than in a stoker-fired furnace where the greater part of the ash remains on the grate; (3) temperature changes may be more abrupt on banking, since no mass of incandescent fuel remains in the furnace.

The two principal methods employed to lessen the severity of the service to which refractories are subjected are: (1) Direct cooling of the refractories by passing all or part of the secondary air required for combustion through channels back of the lining; (2) indirect cooling by supplementing the radiant-heat absorbing surface of the boiler tubes with side-wall heating surface, water-tube slag screens and radiant superheaters.

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Much Electrical Equipment Tested for Safety By U. S. Bureau of Mines*

Work of Bureau Is of an Advisory Not a Mandatory Nature—Power Truck Offers Much in Way of Safety—Co-operation Sought, but Not Demanded

By L. C. Ilsley
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ONE PHASE of the U. S. Bureau of Mines investigations, under the act by which it was established, is the study of various electrical equipment used in mines. The object of these studies is to render an opinion as to whether or not such apparatus is liable to introduce a hazard of any kind. To assist in the investigations, certain standards of safety, termed schedules, have been developed and established with the aid of the manufacturers and users of the equipment. Apparatus that meets the requirements of these schedules is known as "permissible equipment." This signifies that, in the opinion of the Bureau of Mines, certain minimum standards of safety have been met which render the equipment safe for use in mines where gas or dust may occur in explosive quantities. The safety work of the Bureau of Mines is entirely advisory and in no sense mandatory. For example the Bureau may advise a state mine inspector, and often does so upon his request, of its opinion of some particular equipment. However, such advice places no obligation on the inspector and if, as a result of this recommendation, he issues certain regulations these are properly a state matter.

Summary of Equipment Approved by U. S. Bureau of Mines

Type of Equipment	Number of Approvals	Number of Manufacturers Represented
Shortwall cutting machines	13	3
Turret-type cutting machines	2	2
Shearing-type cutting machines	1	1
Coal-loading and conveying equipment	6	4
Storage-battery locomotives for gathering service	12	6
Storage-battery locomotives for main-line haulage	1	1
Storage-battery power trucks	3	2
Electrically driven pumps	2	2
Electric hoists	1	1
Electrically operated rock-dusting machines	2	2
Electrically operated air compressors	3	2
Electric drills	3	3
Single-shot blasting units	8	5
Electric cap lamps	7	4
Miscellaneous electric lamps	3	3

CO-OPERATIVE WORK NOT OBLIGATORY

In the same manner, co-operative work with manufacturers is in no sense obligatory. All equipment is submitted voluntarily and the Bureau of Mines has no power to prescribe where the equipment that passes its tests shall be used. Again, this is a matter that is entirely within the control of each state. If information is desired relative to the safety of certain equipment, every mining state has the privilege of having that apparatus tested by the Bureau. Information with reference to the safety work of the Bureau of Mines is available at all times to state mining departments which are free to accept such recommendations as fit their requirements.

Permissible mining equipment was first used in the United States in 1914. In the beginning, only a few such machines were sold and, in general, manufacturers were inclined to view the procedure as an expensive experiment. However, the demand for permissible apparatus has grown until today it is constructed by several manufacturers. Not only has the demand for approved equipment increased but the types of apparatus so approved have multiplied until nearly every service to which electrical devices can be applied underground is now represented. Obviously, it is impossible to describe all of the electrical apparatus that has been approved by the Bureau of Mines. As motors and their electrical accessories are employed in many modern mining operations, some of the features bearing upon the work of approving such machines will be discussed. As an operator who desires to purchase permissible electrical equipment is quite likely to be confused by the large number of designations in use, a brief mention of the terminology employed is perhaps advisable. A reference to any standard authority on electrical equipment will reveal many types of machine inclosures. For example, the American Institute of Electrical Engineers† employs the following standard designations: Open, protected, semi-inclosed, totally-inclosed, separately ventilated, water-cooled, self-ventilated, drip-proof, moisture-resisting, submersible and explosion-proof. Several of these terms are defined under "Classification of Rotating Machines Relative to the Degree of Inclosure," and a few are here quoted:

Open machine.—An "open" machine is of either the pedestal-bearing or end-bracket type where there is no restriction to ventilation, other than that necessitated by good mechanical construction.

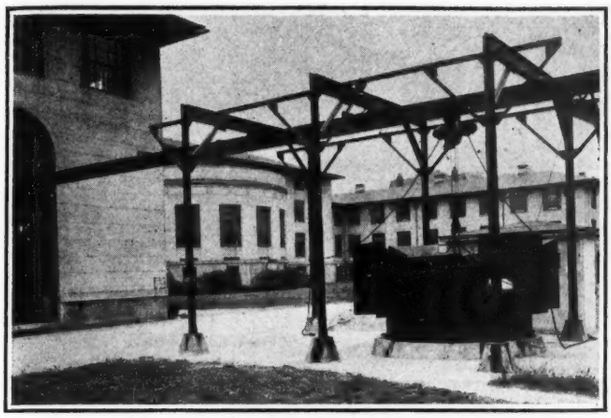
Totally-inclosed.—A "totally-inclosed" machine is one so inclosed as to prevent circulation of air between the inside and the outside of the case, but not sufficiently to be termed "airtight."

Explosion-proof.—An "explosion-proof" (or "flame-proof") machine is one in which the inclosing case can withstand, without injury, any explosion of gas that may occur within it, and will not transmit the flame to any inflammable gas outside.

The reference previously cited includes tentative definitions for terms relating to controllers, circuit-breakers, switches, fuses and accessories. Among the definitions are "dustproof," "gas-proof," "gas-tight," and "splash-proof."

*From a paper entitled "Permissible Electrical Equipment," presented before the meeting of the Rocky Mountain Coal Mining Institute, held in Denver, Colo., Feb. 23 to 25, 1927. Published by permission of the director of the U. S. Bureau of Mines.

†Trans. Amer. Inst. Elec. Engr., Vol. 37, Part II, 1918, p. 1766.



General View of Motor-Testing Apparatus

This illustration shows the arrangement of equipment at the Bureau of Mines Experimental Station, Pittsburgh, Pa. In the right foreground is the testing gallery and, immediately behind it, the operating or control house. The overhead crane-way extends to the electrical laboratory shown at the left.

Dust-proof.—Apparatus is designated as being dust-proof when it is so constructed or protected that the accumulation of dust within or without the device will not interfere with its successful operation.

Gas-proof.—Apparatus is designated as gas-proof when so constructed or protected that the specified gas will not interfere with its successful operation.

Gas-tight.—Apparatus is designated as gas-tight when so constructed that the specified gas will not enter the case.

Splash-proof.—Apparatus is designated as splash-proof when it is so constructed or protected that external splashing will not interfere with its successful operation.

WHAT "PERMISSIBLE" MEANS

Permissible.—This term although not defined by the A.I.E.E., has been applied to apparatus approved by the Bureau of Mines. It is perhaps best defined as "apparatus listed by the U. S. Bureau of Mines for use in atmospheres which may contain gas (methane) or coal dust in dangerous quantities."

The definition of an explosion-proof machine, as given by the A.I.E.E., is not strictly correct in that the words "any explosion of gas" are used. It is probable that certain unusually active gases, such as hydrogen or acetylene, are so sensitive and violent in their action that no practical protection will properly safeguard electrical equipment in their presence. Therefore, the definition of explosion-proof equipment should be qualified to that extent.

A brief consideration of the limitations of different types of inclosures, from the viewpoints of the safety engineer, may also be of interest.

The "open type" machine is not designed to offer any protection and therefore is the least safe for service in gaseous mines. Such machines afford the maximum ventilation to the windings and other electrical parts but should have no place where mine safety is the major consideration.

The "semi-inclosed" machine is as dangerous as the open type. The partial inclosure of the equipment mechanically guards the electrical parts but offers no protection against ignition of gas or dust.

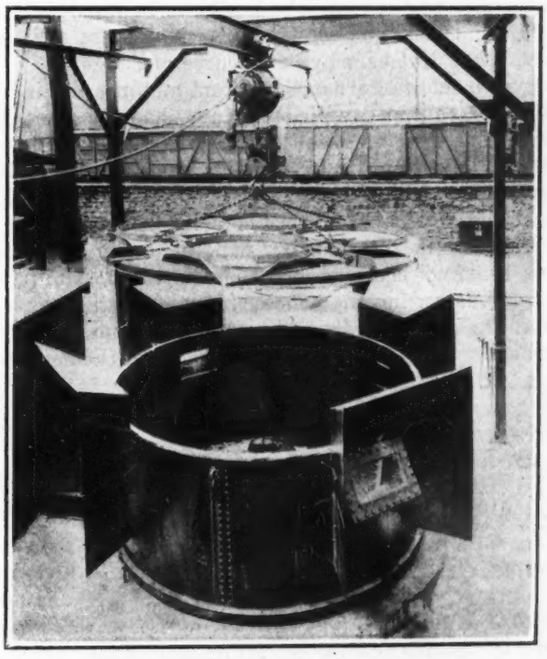
The "totally-inclosed" type of machine precludes free circulation of the air and, therefore, prevents some dust from reaching its interior. The covers of such machines are usually thin and the joints loose and, consequently, gas and fine dust can readily enter the apparatus. Because of the construction, the covers and perhaps the entire machine would be destroyed if the gas or dust should explode. This type of equipment, like the others just described, offers no protection against ignition of gas or dust.

The machine that is designated as "flame-proof" or "explosion-proof" should be carefully studied because, in many instances it is a "wolf dressed in sheep's clothing." It may be but little better than the totally inclosed type of apparatus. The covers may have too few bolts and failure to insert one of these may leave an unprotected hole leading directly into the machine. The joints of the apparatus may be equipped with gaskets that it is impossible to keep in good repair. The openings around the bearings or the lead wires may be unsafe. The machine may be operated by an open-air switch, controller or rheostat. There is no assurance that such an apparatus was ever tested in gaseous mixtures or given special attention at the factory. Whatever its condition, it is practically certain to be sub-standard when compared to a permissible machine.

SEMI-PERMISSIBLE ONLY PARTIALLY APPROVED

Semi-permissible equipment usually contains some parts that have been approved by the Bureau of Mines. However, for one reason or another the mine operator is either unwilling to assume the responsibility of maintaining a permissible machine in safe condition or else he wishes to retain some practice or condition that is not considered safe by the Bureau. For example, a trolley pole on a storage-battery locomotive is a combination that is not approved by the Bureau of Mines. Some operators insist on such an arrangement yet want all other parts of the locomotive approved. Hence the semi-permissible apparatus found in practice.

Permissible equipment represents the highest degree of safety. It has been more carefully designed than



Cover and Interior of Testing Gallery

This apparatus, which permits tests to be made under conditions closely approximating those that may be found in mines, has a capacity of about 400 cu.ft. Note that the cover carries paper heads which burst if an explosion occurs. The observation windows enable the operator at all times to watch the machine being tested.

any of the so-called "explosion-proof" apparatus. All of the accessories, including the wiring, are considered in approving its safety. During construction the machine receives more attention at the factory than other equipment. Lastly, it is the only kind of equipment whose design is inspected and checked by a disinterested testing department—namely, the Bureau of Mines. Only permissible equipment carries an approval plate certifying that it is safe for mine use. A caution on this plate calls attention to matters that require special care if the apparatus is to be maintained in a safe condition. Although it represents the best practice from the viewpoint of safety, even permissible machinery does not offer any great amount of protection if it is not kept in good repair by the user.

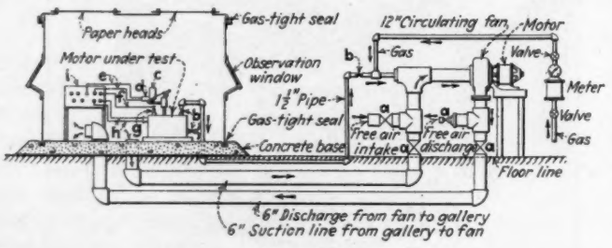
DESIDERATA IN PERMISSIBLE EQUIPMENT

A number of factors, such as type, size and place of operation, influence the selection of permissible equipment. These will be briefly considered. Electric motors are usually classified under two principal divisions—direct and alternating-current. In some applications alternating-current equipment offers less difficulties in operation than direct-current apparatus because no starting or regulating resistance is required. Also, where the "Y" to "delta" method of starting is used, the controller or starting switch is less complicated and is smaller in size than that used for direct-current motors. Open-type direct-current motors make no pretense at safety, and because of sparking at the commutator, are generally recognized as dangerous in atmospheres containing gas. If sparking is sufficiently intense, the direct-current motor may also constitute a hazard in the presence of dense clouds of coal dust. There are several other dangers, such as loose connections at the terminals or burnt-out armatures and field coils, that may arise from the use of this type of motor. These last-named hazards are more or less common to all underground apparatus which frequently is subjected to hard service and operated at less than nominal voltage. In addition the motor accessories, such as fuses, switches and starting devices, may be a source of danger.

A synchronous alternating-current motor, or an induction motor equipped with slip rings, has the same liability to sparking as does the direct-current machine.

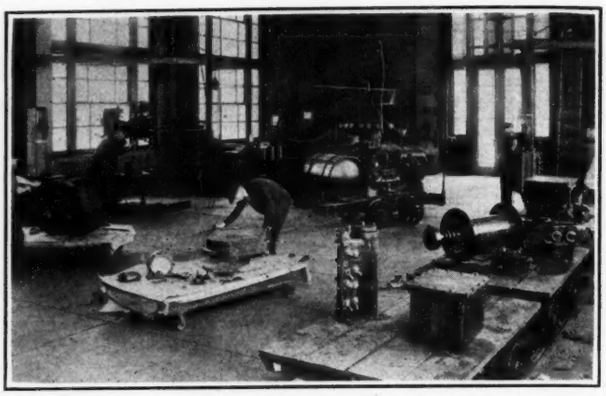
Every induction motor has at least three possible sources of sparking even if it is of the squirrel-cage type. These are: (1) Loose connections; and (2) and (3) failures in the primary winding or in the rotor. When bearings become worn there is the possibility of the rotor damaging the primary or stator windings.

Because of these facts all motors, whether direct- or alternating-current are required to undergo inspection



Sectional View of Testing Apparatus

In this drawing, *a* are the control valves of the gallery circulating system; *b*, the control valves of the motor circulating system; *c*, the recording pressure indicator; *d*, the release magnet for the indicator *c*; *e*, the connections from the switchboard to magnet *d*; *f*, the ignition line; *g*, the spark plug; *h*, the power lines to the motor; and *i*, the terminal board.



Interior of Electrical Testing Laboratory

The illustration shows a general view of the laboratory which is equipped with jib-cranes and trucks to facilitate the inspection of electrical appliances of various kinds. Here all of the equipment that is tested is taken apart and the details of its construction carefully studied and examined.

and test by the Bureau of Mines before they are approved for use as permissible equipment.

If an electric motor is to be operated on the surface, for example to drive an exhaust fan, there are two general methods of protection: (1) A supply of fresh air is delivered to the motor compartment and motor control, or to a housing surrounding both, so that the formation of an explosive atmosphere at that point is impossible; or (2), the motor and its control are so designed that they will be safe in the event that dangerous conditions should arise.

ELIMINATING MOTOR HAZARDS UNDERGROUND

Where a motor is to be used underground, conditions are usually such that it is too expensive to conduct a separate supply of fresh air into the mine solely for the purpose of ventilating the machine housing as has been suggested in the case of an outside installation. The alternatives are to install the machine at some point where there is a constant supply of pure air, for example on an intake airway, or to so design it that it can be safely used in a gaseous atmosphere if, through some unusual circumstance, the apparatus must operate under such conditions.

Portable equipment, such as cutting machines and drills which are in daily use at the face, is more likely to encounter explosive atmospheres than a pump whose operating position is more or less fixed for long periods of time. In the latter case it may be possible, by lengthening the suction pipe to the pump, to remove the motor from a gassy place and locate it in the intake airway.

The size of a machine also influences its safety. It would greatly reduce the efficiency of a large motor to completely inclose it or in any way prevent the free circulation of air through it. Then too, many designs depend upon this feature to keep the motor at a safe operating temperature. Fortunately the majority of motors requiring special safeguards are not rated at more than 50 hp. Small totally inclosed motors have been in successful use for some time. As a motor is reduced in size, the problems of good machining, adequate flanges and sufficient fastenings are simplified. At the same time the size of the rheostats, controllers and other accessories necessary to its operation are proportionately reduced.

Other things being equal, a machine intended for constant service must be more rugged and have a larger capacity than one built for intermittent work. But whether

the service is constant or intermittent the motor and its accessories should be designed with a high factor of safety to guard against failure of one kind or another. Portable machines are not as easily maintained in safe operating condition as is stationary apparatus. This is unfortunate because, as previously stated, portable equipment usually requires the greater degree of protection. Not only must the motor and all of the accessories of portable machines be carefully maintained for this harder service but usually there is also a trailing cable which, if not carefully handled and frequently inspected, may arc or flash due to excessive wear or damage to the insulation.

Motors, particularly those operating on direct-current, require cleaning of the commutators, renewal of the brushes and adjustment of the brush-holders. Fuse boxes must be opened to replace fuses and adjustments of the controller fingers must be made. A certain degree of accessibility is, therefore, desirable in such apparatus. Access to the inside of the motor is often afforded by hand holes. Whether the covers to these hand holes should be bolted on or fastened in some manner more amenable to quick removal is considered to be a question rather of convenience than of safety. The Bureau of Mines has approved apparatus of varying degrees of accessibility and believes that this is, in general, a matter which should be adjusted by joint agreement between the user and the manufacturer.

How many have ever seriously considered why the average mine that is electrically equipped is literally filled with wires running in all directions? In the majority of cases the answer is that this is necessary in order to bring power to the face where most of the work is performed. If the power plant actually could be brought to the face, nearly all the wiring would be eliminated and the property might then be termed a "wireless electrically-equipped mine."

Small Power Plant on Wheels

The storage battery is in itself a small power plant. If it is placed on wheels and taken to the face, the problem of eliminating a large amount of wiring is solved. This actually has been accomplished by several companies in certain mines throughout the Eastern states. Storage-battery trucks are furnishing power to cutting, loading and rock-dusting machines as well as to pumps. This method of using electricity in mines is too new to furnish any definite data with reference to its economic possibility, but from the viewpoint of safety it offers much.

The Bureau of Mines hopes to see the center of distribution of permissible electrical equipment, like the center of population, move westward. If such apparatus is beneficial to eastern states like Pennsylvania and West Virginia, it should be equally advantageous to states in the Rocky Mountain region.

Men and Women of the Mines
V—The Mining Engineer

By H. S. Geismer
Birmingham, Ala.

He is a mining engineer, has been one in fact ever since he received his degree in mining engineering 33 years ago. He is 58 years of age now. As a youth he was possessed of high ideals. He chose his profession deliberately and entirely on his own responsibility, none of his forebears had been connected with mining in any capacity. He selected mining as his life's calling because it was one of the basic industries, had need of engineering direction, and he felt that his talents lay in that direction. Furthermore, in that industry labor and capital were still far apart, one suspicious of the other and he felt that men with broad sympathies might have opportunity to do something really worth while.

On completing his college course, therefore, he accepted a minor position on an engineering corps at a coal mining camp in a distant state.

Foreman Becomes His Mentor

Shortly after his arrival one of the assistant mine foreman at the camp, impressed with his amiable manner and realizing the shortcomings of the camp boarding house to one unaccustomed to coarse fare and rough surroundings, invited him to come and live with his family; the invitation was gladly accepted. In those days movies and automobiles had not come into being and nights at a mining camp were dull indeed for a young man. The assistant foreman and the engineer spent hours together after the rest of the household had retired, exchanging confidences and knowledge. The foreman was a self-educated man, never having spent a day in school, in fact he had learned to read and write after attaining his majority. But he had had much practical experience. Having been raised at the mines, a miner's son, he was qualified to lay bare to an outsider the soul of a miner, assuming that it is possible to lay bare by mere words the soul of any human being.

From his talks with the foreman the engineer began to doubt the possibility of being able to fill a berth in the operating department either with pleasure to himself or with profit to his company, assuming, of course, that eventually he would be offered such a position. He learned that miners took advantage of their employers in every possible way and a superintendent had to be constantly on his guard to keep from losing the whip hand; also that the operators in turn felt justified in taking advantage of the miners whenever they found it possible—which was not often. Surely his friend, the foreman, ought to know whereof he spoke, for he was in duty bound to one faction through birth and early association and to the other by opportunity offered and accepted.

Finds Workmen and Employers at Odds

The more the engineer looked into existing conditions the more impressed he became with the great gulf which separated employees and employers and, in consequence, the futility of an operating official offering suggestions to either side. This led to a determination to stick to engineering. And he stuck even though it barred the path to most doors opening toward advancement.

Inasmuch as he remained a salaried man with no executive responsibilities he was classed as a neutral by both miners and company executives and was left free to look into the hearts of men, as he expressed it, without exciting suspicion or being charged with duplicity. But he has never been able to explain to others in an intelligible manner the things that he has there discovered. When he accomplishes this feat he will have been repaid for all the sacrifices that he has made. Possibly, also, the great gulf will have become less formidable.

South African Coal Growing in Importance

In 1925, 67 Mines Produced 15,250,000 Tons, Representing an Increase of Nearly 10 per Cent Over the Output of 1924—Most Labor Employed Is Negro and the Quality of the Output Is Fair

By R. W. Morris
New York City

PRODUCTION of coal in the Union of South Africa in 1925 was estimated at about 15,250,000 net tons of which 13,732,376 tons were marketed. This is an increase of over 1,500,000 tons from the previous year's output and approximately 733,710 tons in the quantity sold for export. The increase in the year's production and in the amount of sales is attributed in part to the British strike of last summer resulting in a greater demand for South African coal by foreign countries.

That South African coal mine owners are going deeply and increasingly into the manufacture of by-products is evidenced by the statistics available, which show that during nine months of 1926, 148,974 tons of coal were coked. From this tonnage 66,524 tons of coke was obtained. This compares with 54,443 tons of coke manufactured during the twelve months of the previous year.

At present South African coal is produced by 67 mines. Twenty-one operating companies are members of the Transvaal Coal Owners' Association, and have a monthly production of about 750,000 tons. The largest representation in the Association comes from what is known as the Witbank District, comprising about ten companies with upwards of 14 pits. Other districts included in the membership of this Association which has its headquarters at Johannesburg, are the Spring District Collieries, numbering three mines; the Nigel District with one operating company and the Orange Free State District with two companies.

Other Associations and companies in South Africa include the Natal Coal Owners' Association, the Dundee Coal Estates, the Durban Navigation Co., and the South African Coal Estates, Ltd.

In the headpiece accompanying this article is shown the topworks of a mine in the Transvaal. The coal areas in this region are not extensive as Americans usually understand that term, yet the output is finding an increasing market and application. The product is of fair quality as is evidenced from the analyses.

An interesting feature of the coal mining industry in South Africa is the effort made to reduce the number of accidents. The various companies have established accident-prevention bureaus and every effort is made to save the employees from injury. The latest statistics available show that during 1925 the total average number of men employed monthly in and about the mines was 36,653, including both whites and colored. During the twelve months there were 482 accidents of all kinds, of which 82 were fatal. The average number of deaths per 1,000 employed was 2.35. Comparing the number of employees in service in January, 1926, and December of the same year, reports from the Department of Mines and Industries show 36,422 in January, of which 1,697 were white and 34,725 colored. In December there were 1,793 whites and 36,384 colored, a total of 38,177.

Transvaal Sales Are Largest

Of the tonnage sold last year, the output of the Transvaal district, the largest of the four mining sections, found the largest market, 8,239,347 tons being sold. Sales by the other districts, as reported were: Cape District, 5,615 tons; Orange Free State, 978,545 tons and the Natal District, 4,159,366 tons.

One of the largest exporters of coal from South Africa is Mann, George & Co., which firm has offices also in New York City as well as London, Glasgow and other parts of the world. This company is a member of the Transvaal Coal Owners' Association and has its piers on Delagoa Bay and at Capetown.

The inland coal fields of South Africa are in three divisions or sections known as the Klip River coalfield, the Vryheid and the Utrecht coalfield. The former comprises the whole of the coal-bearing area between Ladysmith and Newcastle and embraces the area in which coal was first discovered and from which until recent years the whole of the coal mined in Natal was obtained,

according to W. J. Wybergh in "Coal Resources of the Union of South Africa," issued by the Department of Mines and Industries. The total length of the coalfield area from Newcastle to the southernmost point is about 53 miles and the greatest width from Malongeni in the east to the western extremity is 25 miles.

Composition of Strata

The strata forming the coal measures consists, besides the coal seams, of shales, sandstones and grits, and occasional thin beds of ironstone. Conglomerates are practically unknown. The commercially valuable beds are only two in number, and though both overlain and underlain by others, are locally known as the "Top" and the "Bottom" seams. Some of the other beds are workable, however. In only a few collieries are both seams worked over the whole area, though in most cases at least a portion of both have proven workable under existing economic conditions. The other beds are so thin, in most cases only a few inches in thickness. In consequence it is safe to assume that they will never be operated in this generation.

The two principal beds are more or less persistent throughout the whole area of the coalfield. They thin out in places to less than 2 ft. 10 in., but throughout the greater part of the area they are between 3 and 5 ft. thick.

Analysis of Coal in Central Area

An analysis of 21 bulk samples from various collieries in the central area between Biggarsberg and Dannhauser where the coal is not obviously affected by igneous action show the following results: Moisture, 0.95 per cent; ash, 12.35; volatile matter, 17.89; fixed carbon, 68.70; total sulphur, 1.56 per cent, and calorific value, 13,850 B.t.u.

In the area between Dannhauser and Newcastle (the Northern area) the quality of the coal is markedly different from that farther south. The percentage of volatile matter is higher, but at the same time the amount of ash increases and the coal becomes less suitable for coking. An average of 15 bulk samples showed the following analysis: Moisture, 2 per cent; ash, 13.22; volatile matter, 26.17; fixed carbon, 58.15; total sulphur, 1.42 per cent, and calorific value, 12,940 B.t.u.

Owing to the small demand for coal gas in South Africa the Natal coal, though much of it is quite suitable, does not find much of a market for the purpose.

Mr. Wybergh estimates there are 2,139,045,000 tons of coal in the Klip River coalfield alone.

The Vryheid is not a continuous coalfield but only the remains of a number of detached coal-bearing areas which obviously at one time formed part of a deposit that was continuous with that of Utrecht. The greater portion of this once large field has been removed by denudation. The total area of this district, according to Mr. Wybergh, is roughly 870 square miles, or 555,700 acres. Of this only about 32,000 acres or 5.7 per cent is coal bearing. The mines are situated within a radius of approximately 16 miles of the town of Vryheid.

Four main coal beds are fairly persistent throughout the Vryheid district and at one point or another are economically valuable. These are known as the "Alfred," "Gus," "Dundas" and "Coking" seams. In many respects the "Gus" may be regarded as the most important. It is fairly uniform in quality and less variable in thickness than the others. It is also more generally worked than any of the other coal seams found in the Vryheid district.

The Dundas seam varies considerably in thickness and general character and has a decided tendency to split. In most cases coal is being mined from all these various beds in the same colliery but in varying proportions.

An analysis of 12 bulk samples shows the following result: Moisture, 1.40 per cent; ash, 12.05; volatile matter, 17.63; fixed carbon, 68.98; total sulphur, 0.62; sulphur in ash, 0.13 per cent, and calorific value, 13,800 B.t.u.

Vryheid Field Has 571,500,000 Tons

The Vryheid coalfield, according to the latest estimates available contains 571,500,000 tons of coal.

The Utrecht coalfield is the largest and at the same time the least known of all those in Natal. It comprises all the coal-bearing area situated within the magisterial district of Utrecht and contains, it is estimated, 6,106,892,000 tons of proved, and an undetermined amount of unproved coal. In 1925 there were three collieries actually producing, two of which were considered important, and the third small.

Owing to the comparatively backward condition of mining and prospecting in the Utrecht district the coal beds there are not known in the same detail as they are elsewhere.

Six analyses of bulk samples of coal from this region gave the following result: Moisture, 2.12 per cent; ash, 10.40; volatile matter, 22.37; fixed carbon, 65.13; sulphur, 0.89 per cent, and calorific value, 13,620 B.t.u. No plants for the coking of coal have been constructed in the Utrecht district.

CORRECTION:—It has been brought to the attention of *Coal Age* that the word "permissible" appearing in the first paragraph of the article entitled "Flameproof Tandem Storage Battery Locomotive," in our issue of March 10, p. 385, should have been "flameproof." It is quite true that this machine, as stated, is of a "permissible type," but, as pointed out by both the manufacturer and the Department of Commerce it has not yet passed the tests of the Bureau of Mines. Permissibility, therefore, is not claimed for this machine by its manufacturer.

Coal Train

This is a solid trainload of African coal in northern Natal. In Africa, as in this country, the coal occurs in the interior and must be hauled by rail to reach market.

Can Resistance Be Determined Experimentally?

Friction Coefficients Now in Use Are Generally Empirical Because of Conditions Under Which They Were Established—Using the Experimental Method Here Described, It Is Believed Exact Constants Can Be Evolved

By A. J. Nicholas
Dept. of Mechanical Engineering, Pennsylvania State College, State College, Pa.

COMPLETE DATA on the study of air-flow resistance in mine entries seem to be lacking. This fact is clearly brought out in Bulletin No. 158, entitled "The Measurement of Air Quantities and Energy Losses in Mine Entries," published by the Engineering Experiment Station of the University of Illinois. The difficulties encountered in determining a few resistance constants can be readily appreciated from a study of this bulletin. Due to the limits of such experimental work it is impossible to evaluate, even for a single typical mine entry, a complete set of data for the resistance factors. Furthermore, the constants thus found are generally empirical as they are usually based on previous experimental work involving some assumptions. In view of our present knowledge of fluid flow, this need no longer be the case as we now may apply exact science to the problem. As a consequence, instead of the "floating" factor based on assumptions, we can definitely establish an unchangeable friction constant for geometrically similar mine entries. The means and methods of establishing such a constant are treated in the following discussion.

AERODYNAMICS CALLED INTO PLAY

The science of aerodynamics has helped to establish, on a sound fundamental basis, the friction losses in pipes. It is believed that the same science can aid in the determination of friction losses in mine entries. By the principle of dynamic similarity, established theoretically by Stokes* in 1850, and amplified by Lord Rayleigh†, the resistance R per square foot of rubbing surface may be expressed by

$$R = dV^2\phi\left(\frac{VP}{\nu}\right)^{\frac{1}{2}}$$

In this equation, ϕ is some function of $\left(\frac{VP}{\nu}\right)$, the latter commonly known as turbulence; d is the density of the fluid in pounds per cubic feet; V is the fluid velocity in feet per second; P is the perimeter of the conduit in feet and ν is the kinematic viscosity of the fluid in square feet per second. This theoretical deduction was completely substantiated by Stanton‡ and his assistants for the flow of air, water and oil through smooth-drawn brass pipes of various diameters. Their results are shown in Fig. 2, in which the resistance factor $\frac{R}{dV^2}$ is plotted against turbulence $\frac{VP}{\nu}$. The resistance factor $\frac{R}{dV^2}$ is thus definitely established for geometrically similar pipes. It is interesting to note that this method of determining pipe-line losses is extensively used in the oil fields of the United States.

The resistance factor could be determined for any typical mine entry by using a model geometrically similar in its proportions. Water, oil, and possibly air could be used as fluids. The regulation and variation

*Cambridge Philosophical Society Proceedings.
†Philosophical Magazine, 1892, p. 59.

‡Proceedings Royal Society, Part A, 1911 and 1920. See also "Report of Advisory Committee for Aeronautics (London), 1909-1910."

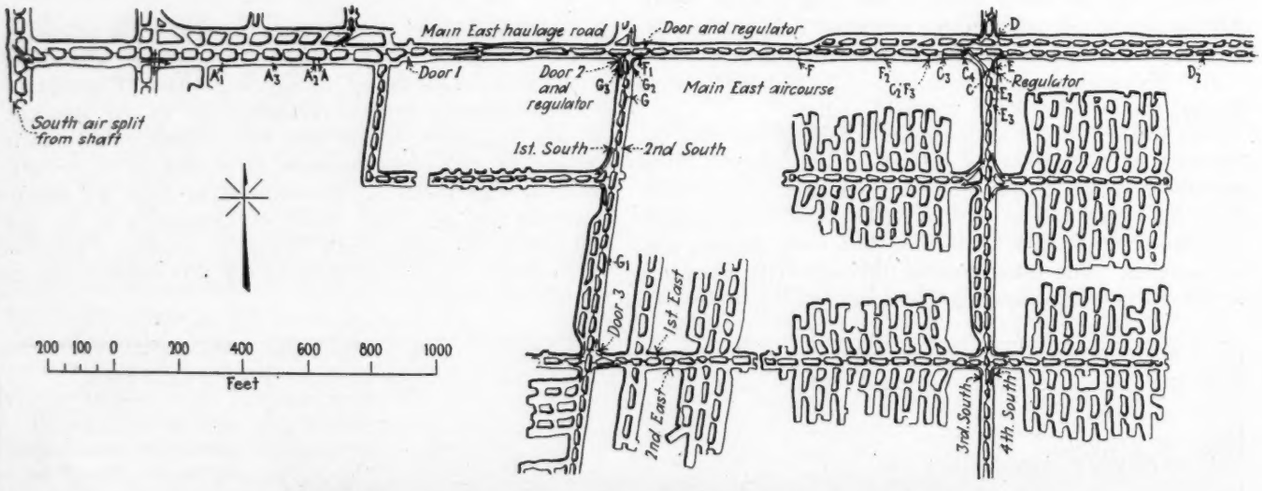
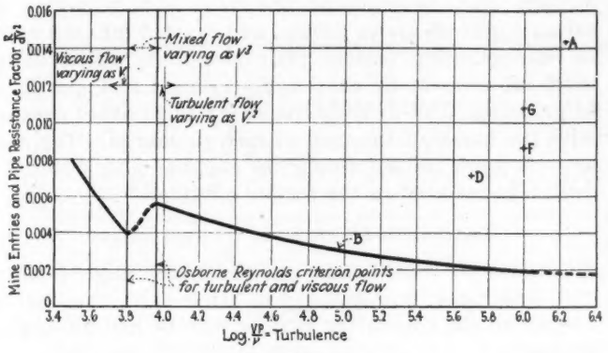


Fig. 1—Portion of Workings at Kathleen Mine of Union Colliery Co.

It was in this mine located at Dowell, Illinois, that the experiments described in Bulletin No. 158, "The Measurement of Air Quantities and Energy Losses in Mine Entries," published by the Engineering Experiment Station of the University of Illinois, were conducted. In the accompanying article and illustrations, reference is made to several of the points indicated on this map.



LEGEND

A *Av. point for mine entries sections A_1-A_2 and A_2-A_3 300' and 150' long respectively*
G *Av. point for mine entry section G_1-G_2 500' long*
F *Av. point for mine entries sections F-F_3 and F-C_2 249.5' and 400' long respectively*
D *Reading for mine entry section D-D_2 636' long*
B *Graph by T. E. Stanton for smooth-drawn brass pipes*
V, ft./sec. *Mean pipe or mine entry velocity*
P, ft. *Perimeter of pipe or mine entry*
ν, ft.²/sec. *Kinematic viscosity of fluid*
R, Poundals/ft.² *Resistance per unit area of rubbing surface*
d, lb./ft.³ *Density of fluid*

Fig. 2—Pipe and Mine Resistance Factors

The points *A*, *D*, *F* and *G*, in the above chart, represent the average values of mine resistance factors as determined from friction measurements in an actual mine. Three of the points fall on a smooth curve and indicate that the method of determining the coefficient of mine resistance, suggested in the accompanying article, could likely be used to establish definite constants for mines of geometrically similar cross-sections.

of flow in the model mine would be much simpler and more accurate than in a full-sized operation as the water (if this fluid were used) could be maintained at a high velocity and the pressure differentials measured would also be high. By evaluating the results thus found, and plotting them as in Fig. 2, the resistance value for the actual mine could be readily found from the principle of dynamic similarity viz. for a given value of $\frac{VP}{\nu}$ the model resistance would be the same as the resistance for a full-sized mine. It might be desirable to construct three geometrically similar models, with smooth, typical and unusually rough surfaces, and conduct tests on each in the manner previously described.

A comparison of the resistance factor for each of the three types of mine entries could be made by plotting the results as in Fig. 2. It probably would be found that the curve showing the results obtained from the smooth-surfaced model would lie near the bottom of the chart, that of the rough-walled model at the top and the curve of the typical model between the other two. This is found to be true of pipes with smooth, rough and ordinary surfaces. Such a comparison would definitely establish the resistance characteristics of the types of mine entries just mentioned.

The average results for the resistance factor $\frac{R}{dV^2}$, as reported in the bulletin of the University of Illinois to which reference has already been made, have been taken and computed to the same basis as Fig. 2. These are shown by the points *A*, *D*, *F* and *G* which are plotted against their corresponding values of turbulence. From these results it is evident that the turbulence values encountered in air flow in mine entries are fairly large and far removed from the region of viscous flow. The point *A* corresponds to an average velocity of 428 ft. per min. in an airway having a nominal cross-section of 6x11½ ft. through which is passing an average quantity of 29,710 cu.ft. of air per min. The point *D* represents an average velocity of 126 ft. per min. in a nominal section of 6½x10½ ft. through which the air is passing at an average rate of 16,910 cu.ft. per min. These points represent the maximum and minimum values, as reported in the University of Illinois bulletin previously mentioned, for which friction measurements were made. It may be noted that the resistance factor for the point *A* is 8½ times that of a smooth pipe with the same value of turbulence. Similarly, the resistance factor as determined for the point *D* is 3½ times as large as that of a smooth pipe.

It is not likely that these ratios would hold throughout a complete range of turbulence as the relative roughnesses of mine entries differ from those of the pipes. The curves for mine entries would probably be a little steeper, in the region of turbulent flow, than those for smooth pipes. In such an event it would likely be found that the friction head varied nearly as the square of the velocity. This, however, can be established only by experimentation.

USE OF PITOT TUBE IS AN ECONOMY

In making tests of the type previously mentioned, much time and energy may be saved through the proper manipulation of the Pitot tube. By calibrating a Pitot tube, for a complete range of flow, in a typical section of the model and then plotting the results as in Fig. 3, a similar tube need only be inserted in the zone of maximum velocity (usually the center of the conduit). The mean velocity for the corresponding value of turbulence, $\frac{V_{max}P}{\nu}$, may then be readily obtained from a calibration curve of the type shown in Fig. 3. However, in order to use such a curve, the section in which

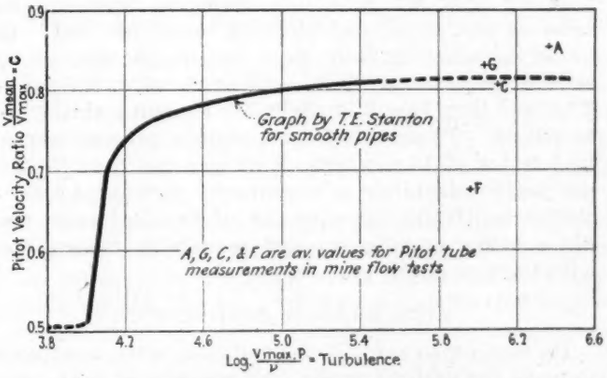


Fig. 3—Pitot Tube Velocity Ratios for Smooth Pipes and Mine Entries

Because its accuracy is much greater than that of the anemometer, the Pitot tube is the preferred instrument for all scientific measurements of velocity. Contrary to general belief, this instrument is not difficult to handle nor is any particular training required to use it accurately.

the Pitot tube is located must be similar in every respect to the section in which the calibration was made. This method of using the Pitot tube was first applied by T. E. Stanton.*

This method has been applied to the tests reported in Bulletin No. 158 of the University of Illinois, and the results plotted in Fig. 3. The points *A*, *G* and *C* agree fairly well with the coefficients obtained by Stanton for smooth pipes. For some reason the point *F* is, no doubt, erratic. From this curve it is also evident that the Pitot tube coefficient is constant—for a particular type of surface—for the values of turbulence found in the air flow of mine entries.

*Loc. cit.

Book Review

McAuliffe Sees 3-Shift Mines With Hot Meals at Face

Load Factor Under 15 per Cent—Would Have 7-Hr. Shifts and Also Three 1-Hr. Shifting Spells—Freight Should Regulate Car Supply

FEW, IF ANY, MEN are as well qualified by experience and study to write a book on "Railway Fuel" as Eugene McAuliffe. At one time a machinist's helper, he became subsequently a locomotive fireman and engineer. Later he was a division foreman, then an air-brake instructor and a road foreman of engines. After serving in these capacities on many of the railroads of the United States and Mexico, he became the first fuel agent of the Frisco lines. When the Rock Island consolidated with the Frisco, he became general fuel agent of the combined lines, having charge not only of the purchasing of fuel but its inspection, accounting and use with both stationary and locomotive boilers. He handled also the coal-chute forces. Later he was president of the Union Collieries Co., at Dowell, Ill., and for some years he has presided over the fortunes of the Union Pacific Coal Co.

In his book Mr. McAuliffe advocates triple-shifting some of the mines and shutting down the rest. He would introduce the 7-hr. day. Miners, he says, do not work 8 hr. anyway. Why not cut the working day to 7 hr. and then have 3 hr. daily for changing shift? As he puts it, "To continue to maintain a general average load factor of 16 per cent (8 hr. per day for 175 days per year) indefinitely is to confess a permanent lack of ability to lift the industry out of the deplorable condition it now occupies, to confess inability to keep step with the rest of the industrial world."

CITES RAILROAD SUPPOSITION

He goes on to say, "If the railroads were to attempt to move the nation's traffic in three days of 8 hr. each, per week, or but 14.3 per cent of the present available time, the facilities would have to be multiplied at least six times, and the cost of service would be prohibitive, yet it is on this basis the industry continues to drag along." Without wishing to say anything on the main proposition, which is too big to canvass here, it might be asked if the railroads can provide and have provided a 100-per cent load factor solely by the expedient of running at a low-capacity factor all the time. The power-station man would deny that they are. But the cobbler is getting beyond his awl.

Mr. McAuliffe advocates, in connection with the three-shift operation and machine loading, the feeding of the men thus employed. "The refreshments to be provided should be of a palatable, nourishing character, without frills, served hot and under scrupulously clean conditions. The ration might consist of hot coffee and tea, a beef stew alternating with a meat goulash or other similar foods; in a sense the principle of the army kitchen might be employed, the menu to be prepared by suitable persons above ground and carried into the mine in heat-retaining vessels, plain aluminum dishes to be used, all such to be thoroughly cleaned and sterilized after using, food to be prepared so as to avoid contact with the hands of the man or men in charge. The cost of a suitable ration would be nominal and would be definitely reflected in the results obtained."

ENVISAGES DOUBLE OR TRIPLE SHIFT

"Sooner or later," adds the author, "some pioneer will undertake the double- or triple-shift method of operation, and thereafter wonder why he had not begun before."

Speaking of coal-car distribution, Mr. McAuliffe says, "The attempt of a carrier or the Interstate Commerce Commission to measure transportation service by any other element than freight offered for shipment is fundamentally unsound and unwholesome. Likewise, denial of the right of a coal shipper to load coal 24 hr. in a day into cars furnished for coal loading, a privilege accorded the lumbermen, the elevator men, the warehousemen and the manufacturers, seems worse than ridiculous.

SAYS CAR SUPPLY IS RAILROADS' DUTY

"In substance, the whole theory of rating coal mines and the subsequent distribution of empty cars thereto represents a task that the railroads should undertake, and one which, if properly carried out, will add during periods of heavy traffic demand not less than 10 to 15 per cent to the number of cars available for transportation service. If sufficient cars are now available under the system of mine ratings and distribution now employed, then the purchase of new cars should be delayed, while the surplus made available by better methods of distribution are being worn out."

The book includes chapters on coal classification, coal analyses, coal storage, the relation of coal to railroad ton-miles, the coal-mining industry, its methods, mines and man power, coal-car distribution, purchase and inspection of coal, present and future use of fuel oil, the report of the committee of eleven of the American Petroleum Institute, the Federal Oil Conservation Board, railroad use of fuel oil, fuel conservation, fuel performance, road losses, locomotive appliances, trends in locomotive design, progress in locomotive utilization, roundhouse fuel economies, water for locomotives in relation to fuel, powdered fuel, miscellaneous fuel consumption on railroads and a central research bureau.

VOLUME IS RICH IN TABULATIONS

It also contains appendices giving blank coal contracts, statements, way bills, tracers, coal-car records, coal reports, chute labor and other chute reports, coal-performance reports, similar oil reports and a number of tabulations and charts of many kinds. In all, there are 468 pages, 5½ x 9 in. The price is $5 and the publisher, Simmons-Boardman Publishing Co., 30 Church St., New York, N. Y.

The coal industry is singularly fortunate to have within its ranks a man of Mr. McAuliffe's background and experience who will take the time thus to give his views, idealistic though some of them may seem to be to many coal men. May we hope that a wide reading of this volume will bring forth alternate views looking toward progress.

Viewpoints Of Our Readers

Devise or Buy Overspeed Devices,—Which?

On page 334 of the issue of *Coal Age*, March 3, 1927, a device is described for preventing the overspeeding of a hoist. This control was built by the chief electrician, of the Galloway Coal Co., Carbon Hill, Ala.

I am a great believer in the use of safety devices on hoists, but I also believe that when there are standard devices on the market that have had much time and money spent on their development, and when only after several years were all the faults in design eliminated, that such devices will be much superior to any makeshift that an electrician at a coal mine would be likely to design or construct, no matter how good a mechanic the electrician might be. The device he would evolve would almost always be found to have some defect and at some critical time might fail.

There are several overspeed safety devices on the market, one of which not only takes care of overspeed, but of almost any conceivable condition that might cause trouble in hoisting. In the case of overspeed this device not only warns the operative when he has gone above a predetermined speed, but takes the control entirely out of his hands and shuts the hoist down if he persists in maintaining this speed or increases it.

It is well to encourage mine electricians and other employees to make and install safety devices on the various types of equipment at the mine, but where there is a high-grade safety device on the market that will produce the desired results, I do not advocate the use of local talent to design and build equipment to perform the same service, or only a part of it.

Mine Safety Appliances Co., GRAHAM BRIGHT,
Pittsburgh, Pa. Sales Engineer.

No Such Quantity of Unbilled Coal

Paragraph four of the letter by Paul Wooton appearing in the April 14 issue of *Coal Age*, states that, "One company in Illinois is said to have loaded 5,000 cars of unbilled coal." I cannot fail to register astonishment at such an extravagant statement from a source heretofore enjoying a reputation for dependability and reliance on fact. It seems incredible to me that without careful investigation you would assume the responsibility for retailing such an unjust statement.

Five thousand cars, approximately two hundred fifty thousand tons of coal would represent fully thirty days' run for our very largest mines, and would mean the tie-up of an extremely heavy volume of money—far beyond any warrant for an individual company.

Total no bills at the close March 31 at all southern Illinois mines, of which there are seventy-one (exclusive of several strip mines) approximated the equivalent of only about four days run for the field as a whole and the record of the entire state is about the same. As a matter of actual fact Illinois producing coal companies had less coal stored both on the ground and in unbilled cars this year than in almost any other shutdown during a strike year.

It is further unfortunate that Mr. Wooton was prompted to say that Illinois operators went to extreme lengths to encourage storage purchase. Quite to the contrary the unusual and outstanding extent to which Western consumers purchased coal was largely due to their own initiative. Illinois producers have never had such a demand for coal preceding an anticipated mine shutdown.

It is for these reasons that we feel such an unjustified declaration in your letter smirks of outright propaganda to discredit the attitude and purpose of Illinois coal producers and for no reason whatever that we can figure out.

The reason why other competing fields which continue at work do not find instant opportunity to move rapidly increasing volumes of coal to market, arises from the fact that they have themselves moved abnormal quantities to the public, who, as above stated, have bought and stored all kinds of coal and from all sources, because prices were low and they wished to be fully fortified against every possible contingency.

Should any other statements regarding Illinois reach you, like those herein mentioned and that might properly challenge credulity, I would greatly appreciate your careful investigation, both for the protection of the interests of Illinois producing coal companies and the repute of your paper. FRED C. HONNOLD,

Honnold Coal Bureau, Manager.
Chicago, Ill.

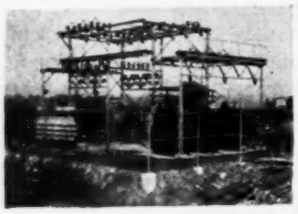
Short Fuse Endangers Everybody in Mine

On the first page of your Dec. 23 issue of *Coal Age*, under the caption "Fuses and Fines," you state that "The use of short fuse . . . does not augment liability to a blown-out shot or the ignition of gas or coal dust above that of a shot that is fired by normal and regular means."

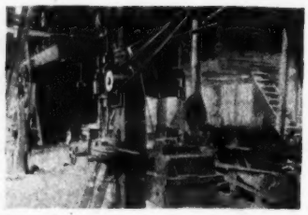
This does not seem to me to be correct, for the reason that a miner who uses short fuse rarely or never tamps the borehole to the collar with non-combustible stemming as the Bureau of Mines prescribes for any explosive to be classed as permissible. A charge cannot be tamped adequately in the time necessary to burn 8 or 10 in. of fuse. The usual practice of miners who use short fuse or "skim 'em backs" is hurriedly to put one or two dummies on top of the primer charge which has the burning fuse and then run for safety. Certainly a charge which has one-fourth or one-fifth of the quantity of tamping required to confine it adequately materially increases the liability to ignition if flammable gas is present. ARTHUR LA MOTTE.

Manager Technical Section.
E. I. duPont de Nemours & Co.,
Wilmington, Del.

WE CANNOT SPEAK of natural resources today unless we refer also to their conservation. The period of exploitation of our natural resources has passed, at least so far as the Government is concerned. The public land grabs of the last century are a soiled page in our history, but the remaining public domain is protected for future generations. Our public coal deposits were exploited during the last century, but since 1906 Government coal lands have been withdrawn from entry and protected by leasing.—*Secretary Hubert Work.*



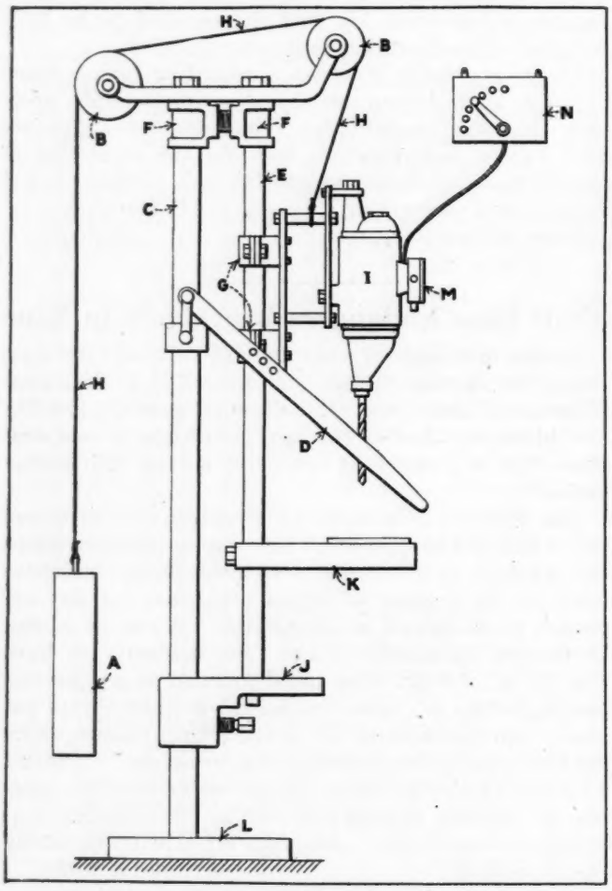
Practical Pointers For Electrical And Mechanical Men



Ingenuity and Scrap Material Make A Drill Press

Built in 1920 and having served usefully since is the record of the "composite" drill press shown in the accompanying illustration. This drill was observed at the Bridgeport mine of the H. C. Frick Coke Co., and is the work of Mr. Enfield.

Referring to the illustration *A* is a cast-iron weight



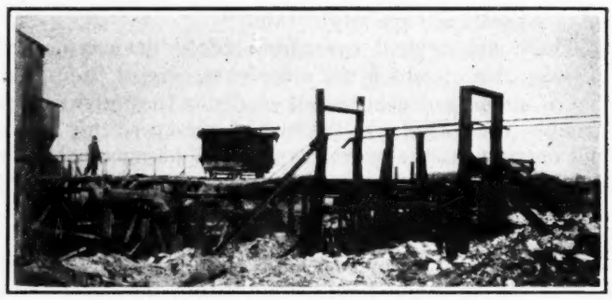
Recovered from Discarded Material

Around an electric coal drill or auger was built the drill press as shown in the above illustration. Here is an example of re-use of scrap equipment and material.

used to counterbalance the weight of the drill. *B-B* are 3-in. pulleys; *C* a 2-in. cast-iron pipe; *D* is a lever which raises or lowers the drill when being used. *E* is a 1¾-in. finished pipe with a key guide along which slides the shoe of the drill holder. *F* and *F* are pipe tees; *H* is a ¼-in. wire rope which runs from the drill to the counterweight. *I* is a Duntley electric coal drill and *J* is a fixed iron base held by two setscrews. *K* is a regular drill-press table revolving around *E* on a brass bushing. *L* is a 14-in. base, *M* a starting switch and *N* a small rheostat. This simple drill press has been in continuous and satisfactory operation since its installation about seven years ago.

Aerial Cables Transform Refuse Car To Tram Bucket Near Tipple

Design of a wire rope aërial tramway for refuse disposal at a mine where the surface is practically level usually must be somewhat different from that where the refuse is to be carried up the side of a hill or mountain adjacent to the tipple. In the latter case the track ropes rise from the loading point at a steep angle



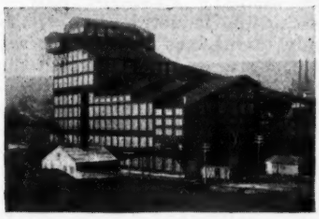
Refuse Car About to Enter Aerial Take-Off

Two track cables are used instead of one. As the car goes through the dead end frame it is picked up automatically by the cables, and the truck goes with the car. The four wheels which ride on the cables are at the upper corners of the car box.

and therefore there is no trouble about making the buckets clear the tracks, road, or mine yard. To get the necessary clearance at a mine where the surface is flat would require a high tower close to the loading station or a rather high loading point in combination with a tower which is situated nearby and is of moderate height.

CAR HAS BOTH WHEELS AND SHEAVES

The accompanying photograph made at the Great Western mine, near Des Moines, Ia., where the surface is fairly level, illustrates an ingenious method of making the refuse bucket or car clear tracks in the mine yard. The chute of the bucket-loading station is about 25 ft. higher than the level of the tracks. The self-dumping bucket or car is equipped on the bottom with ordinary single-flanged track wheels and with wire rope wheels or sheaves at the top. From the tipple to a point across the railroad tracks the bucket runs on rails supported by a trestle. At the end of this trestle wire ropes held in position by long saddles of channel iron engage the upper wheels and the car proceeds from this point to the dump as an aërial tram bucket. Propulsion is by means of a small rope driven by an electric motor at the tipple. The trestle is an old one that was in use for several years before the addition of the aërial tram.



News Of the Industry

Indiana Strip Pits Sign, Shaft Mines To Confer; Pittsburgh Open-Shop Fight Spreading; Lewis Revives Miami Plan

Indiana took the center of the stage in the wage controversy in the union bituminous coal fields last week when a separate contract was negotiated between the stripping operators of the state and district 11 of the United Mine Workers.

This contract, described as a two-year renewal of the Jacksonville rates with modifications in conditions, had been the subject of negotiations between union and operators since April 7. Final agreement was reached by the conference meeting at Terre Haute on the evening of April 20.

The next day announcement was made that the Indiana Bituminous Coal Operators' Association, representing the shaft mines of the state outside of the block coal district, had accepted the invitation of the district officers of the union to meet with them in joint conference in an "attempt to negotiate a contract to replace the Terre Haute agreement." This meeting has been set for May 3 at Terre Haute.

In the western Pennsylvania district there were legal skirmishes between the union and the Pittsburgh Terminal Coal Corporation—with the honors for the time being going to the union forces. The Coverdale mine of the Terminal company was reopened on a small scale on April 20, preparatory to making a real effort to hoist tonnage this week.

Offers Union Incentive

Another recruit to the ranks of open-shop mines was the Hazel colliery of the Chartiers Creek Coal Co., at Canonsburg. Spokesmen for the company said that operations were resumed with old employees. President A. M. Marian also announced that the company stood ready to pay the union scale if leaders of the United Mine Workers could sign up West Virginia and Kentucky.

Officially the situation was unchanged in Ohio and Illinois. Members of the executive committee of the Ohio Coal Operators' Association, at a conference in Toledo last Thursday, reviewed conditions and expressed themselves as highly pleased with the solidarity in their ranks. Spokesmen for the operators insist that eventually the miners will accept the principle of the continuously competitive scale for which the association has been fighting since the first of the year.

No interference has been reported with operations at the open-shop mines in the Pomeroy Bend section. A few strip pits and small captive mines are working in other parts of the state. Statements from union sources that headway is being made in signing up producers under an interim agreement are discounted by association operators. One of the recent union gains, the Stellar Coal Mining Co. at Adena, it is pointed out, affects less than 100 workers.

The Coal Operators' Association of Illinois has called another general meeting at St. Louis, Mo., on May 10. Producers who are in accord with present organization policies express themselves as much encouraged by the attitude of certain large industrial consumers who have declared that they will not purchase coal from mines signing separate agreements with the union. Under the surface, however, an occasional rumble of dissatisfaction is heard from a minority chafing at the existing deadlock.

Maryland Miners Reject Cut

The situation in the Cumberland-Piedmont section is uneasy. Collieries at Lonaconing, Md., have been shutting down. The Koontz Coal Co. was compelled to suspend operations early last week when the miners employed refused to accept a reduction of 60c. in day rates. Spokesmen for the northern West Virginia operators claim that conditions in that field have returned to normal.

Operators in Monongalia County, said D. H. Pape, executive secretary of the Monongahela Coal Operators' Association, have ceased to worry about the strike. Labor supply, he declared, has not been affected to any extent. The problem facing producers in that section, according to Mr. Pape, is to find markets which will absorb their output.

A movement to organize an independent union in southern West Virginia has been launched by C. F. Keeney, former president of district 17 of the United Mine Workers. In an opening address at Eskdale on April 17, Mr. Keeney said that the policies of the international officers of the United Mine Workers had brought nothing but disaster to the coal-mining industry of the state and had resulted in the virtual annihilation of the power of the union in West Virginia.

Check-Off Battle Looms In Hard-Coal Field

The check-off fight in the Anthracite Board of Conciliation is reaching a serious stage. The question came up at a meeting of the board at Philadelphia, Pa., last Friday with neither operators nor miners yielding in their position.

The fight centers around the interpretation of clause 4 of the agreement signed in February, 1926. This paragraph reads:

> The demands of the operators and the mine workers on the question of co-operation and efficiency are referred to the Board of Conciliation, exclusive of the umpire, which shall work out a reciprocal program of co-operation and efficiency.

High union officials have publicly insisted that this clause is broad enough to cover the check-off. Operators privately admit that the union is privileged to bring up any question it wishes under this section of the contract, but emphatically deny there was any understanding that they would consent to the imposition of the practice which they have fought so vigorously in the past.

At the meeting last week R. F. Grant, M. A. Hanna Co., who is credited with bringing about the settlement of the long strike of 1925-26, appeared before the board. John L. Lewis, president of the United Mine Workers, argued the case for the miners.

This is not the first time that Mr. Keeney has attacked the program of the Lewis organization. Back in the days when he represented the union in the southern field he openly advocated a modification of the wage demands of the organization and asserted that unless southern West Virginia operators then making joint agreements with the United Mine Workers were given a scale which would put them on a competitive basis with non-union production the organization would be destroyed.

More recently Mr. Keeney's name appeared as editor of the *Coal Miner*, a campaign publication backed by the Brophy faction when the former head of district 2 was an unsuccessful candidate against John L. Lewis for the international presidency. According to Philip Murray, international vice-president, Mr. Keeney repudiated his connection, however, after the appearance of the first issue of the *Coal Miner*.

The United Brotherhood of Miners, recently started in the Southwest, has announced that it will soon call a convention for the purpose of drafting a wage scale to be submitted to Southwestern operators. According to H. Medlin of Macon, Mo., president of the new organization, the scale proposed will recognize varying conditions in the different fields of the Southwest and will give the mines a chance to meet the competition from districts having more favorable operating conditions. Membership is claimed in Missouri, Arkansas and southern Iowa.

A restraining order against John Lovell and 17 other striking miners formerly employed by the Belva Straight Creek Coal Co., in Bell County, Kentucky, was granted by U. S. District Judge A. M. J. Cochran, sitting at Louisville last week. The application of the coal company for summary proceedings to compel the vacation of company houses by the strikers was not granted by the court, who set the case for another hearing at Richmond. Action on a petition of the Wallsend Coal Co. to enjoin former employees from further occupancy of company houses also was deferred.

Evictions Cause Legal Clash

The legal clash between the Pittsburgh Terminal Coal Corporation and the union arose over the issuance of 11 eviction notices. These were challenged by counsel for the United Mine Workers in the Common Pleas Court of Allegheny County and Judge James R. Macfarlane signed an order staying the execution of the writs indefinitely in response to the petition of the union for a rule on the company to show cause why the judgment upon which the writs were based should not be stricken off.

Representatives of the coal corporation were inclined to take the stay lightly, feeling that the technicalities involved in the interpretation of the house leases upon which the court's order was based would be cleared up within a few days. This cheerful view, however, is not shared by every one conversant with the situation. There are some who believe that the action taken by the union in its appeal to the courts may delay evictions for several weeks or months.

At Coverdale 200 union sympathizers paraded through the streets between company houses, led by six women garbed in male attire. The parade was halted by state police and deputy sheriffs and four men were arrested.

In the meantime the company is going ahead with its plans to run open-shop. One of the first moves in this campaign was to bring in miners from southern West Virginia on a special train Friday morning. Local newspaper reports put the number thus imported at 125, but union estimates cut this to 50 or 60. According to Mr. Murray the men, who were brought to Coverdale, left the property within 24 hours.

The Pittsburgh Terminal Coal Corporation ignored Mr. Murray's statement. The Terminal corporation is now following the policy of silence adopted a few days ago by the Pittsburgh Coal Co. Last week the latter company announced that it would discontinue issuing daily reports of production and the number of men at work in a statement claiming that "today we not only are back to our former output and man power but have exceeded them." It is intimated that weekly reports may be made public.

John L. Lewis

There was a brief newspaper flare-up a few days ago over the charge of the union that the Pittsburgh Coal Co. was importing Mexican labor. An appeal to Secretary of Labor James J. Davis brought the reply that the government was powerless to restrict immigration from Mexico and other Central and South American countries. The Pittsburgh Coal Co., added Mr. Davis, is not violating the contract labor law, according to all information reaching the department.

C. E. Lesher, executive vice-president of the coal company, denied the Murray charges of importation. "We have 20 Mexicans employed at the Arnold mine," said Mr. Lesher. "They applied for work about three weeks ago. I understand they had formerly worked at Sharpsburg."

Lewis Revives Miami Proposal

John L. Lewis, president of the United Mine Workers, in a letter to the Federal Council of Churches of Christ in America, commenting upon the bulletin of that organization on the bituminous coal controversy (*Coal Age*, April 7, 1927, p. 509), urged consideration of the resolution he offered at Miami as the starting point in working out "a basis for effective co-operation between employer and employee; a policy that must, in the long run, be adopted in every industry.

"Various movements," wrote Mr. Lewis, "have been started; numerous plans have been proposed; many attempts, governmental, public and private, have been made to cure the ills of the industry. All of these have failed because all of them were conceived, formulated and carried out outside the industry. There is nothing practical in any of them.

"It always has been the contention of the United Mine Workers that the troubles of the coal industry can be settled and the industry stabilized only by those within the industry itself, if they will apply themselves to the task with the same degree of energy which they display in fighting each other. Surely there is sufficient knowledge, skill and wisdom among the thousands of coal operators and the hundreds of thousands of mine workers to work out a fair policy of stabilization that would rescue the industry from its present chaotic status.

"Under the terms of the Miami resolution," continued Mr. Lewis, "the joint body therein proposed would possess full authority for the consideration and settlement of any question that might arise. It would possess ample power to adopt any sound policy, either for production, sales or distribution. Paragraph 'a' says:

"'To strive for conditions in the industry which will give a proper return to capital invested therein and will protect and advance the living standards of those employed in the industry.'

"That clause alone covers the widest possible area. It proposes stabilization boldly and definitely. The resolution proposes that the status quo be maintained until the joint conference accomplishes its work.

"I do not claim for the resolution the virtue of completeness or infallibility. But I do contend that it is a constructive proposal that is entitled to consideration. It was the only proposal laid before the conference at Miami that had anything constructive in it. It was at least a start in the right direction which might, and probably would, have been improved and perfected by the conference body.

"I do not hesitate to say that our Miami resolution is of such constructive value as to warrant the Federal Council of Churches in issuing a declaration to that effect.

Union Ready to Meet Operators

"Our Miami resolution is still alive. It can be taken up at any time that the operators are willing to give it consideration. The representatives of the United Mine Workers stand ready to meet with the operators at any time or place for a full and thorough discussion of our constructive, co-operative proposal. Such a conference and the adoption of a definite policy based upon our resolution would be directly in accordance with the view expressed by the Federal Council of Churches in its bulletin of April 2."

The Palisade Coal & Supply Co., operating a mine at Palisade, Colo., notified the State Industrial Commission last week that it would reduce wages on May 16. The action averted a serious walkout and tieup at the mine. The company recently notified the men that their wages were to be reduced from $6.20 a day to $5.40, in order to meet the wages paid by competitors. Several of the men walked out, claiming that the company must give the usual thirty-day notice of such wage reduction to the Industrial Commission under the state law.

District 2 will hold its regular constitutional convention at Dubois, Pa., May 3. The program will be devoted largely to routine matters.

Upholds Decree Against Union Interference With W. Va. Open-Shop Mines

The campaign of "violence and intimidation" conducted by the United Mine Workers and its officers in an effort to halt production of coal in the non-union fields of southern West Virginia during strikes in 1920 and 1922 has been held a conspiracy in restraint of interstate trade in a decision handed down in Richmond, Va., April 19 by the U. S. Circuit Court of Appeals for the Fourth District.

The decree upheld the Southern District Court of West Virginia in granting an injunction against union leaders after twelve suits had been brought by 316 coal companies. The case was heard by Judge Edmund Waddill, Jr., the late Judge Rose and Judge Parker, the opinion having been prepared by Judge Parker.

Firm in its specifications, the opinion held that the union in itself does not constitute a conspiracy in restraint of interstate commerce. The legality of such organizations has been fixed by the Clayton Act, the court said. "But when the union turns aside from its normal and legitimate objects and purposes and engages in an actual combination or conspiracy, it is accountable in the same manner as any other organization," it was maintained.

Evidence of Conspiracy Shown

The court held that the evidence in the case showed that the defendants had combined to interfere with the production and shipment of coal by the non-union operators of West Virginia to force the unionization of the West Virginia mines and to make effective the strikes declared pursuant to the policy of the union, and that the strikes that were called in 1920 and 1922 and the campaign of intimidation and violence incident thereto was merely the carrying out of the conspiracy.

Although no direct reference was said to have been made in the appeal to the so-called "check-off" system, the court ruled that nothing illegal appeared in the system.

The restraint exercised by the unions, according to the findings of the court, was the interference with the business of the 316 companies by attempting to induce employees of the non-union operators to violate their contracts and to compel those employees by force and intimidation to cease working. Further effort was made, the court found, to force the operators to recognize the union and to deal with it in operating their mines under closed-shop contracts.

That interference with the mines involved in the injunction appeal was likewise interference with interstate commerce was maintained by the court in that the mines of the complainants were shown to produce 40,000,000 tons of coal per year, more than 90 per cent of that amount entering into interstate trade.

It was further held that "it was perfectly clear that the purpose of the union in interfering with production was to stop the shipments of coal to out-of-state points."

The court refused to consider a point of error that the cases were misjoined in trial. Such a consolidation was proper prior to the adoption of the new equity rules, the court pointed out. "It would be most unjust," the decision said, "for complainants, being the objects of this joint attack, to be denied the right of seeking jointly the protection of the courts."

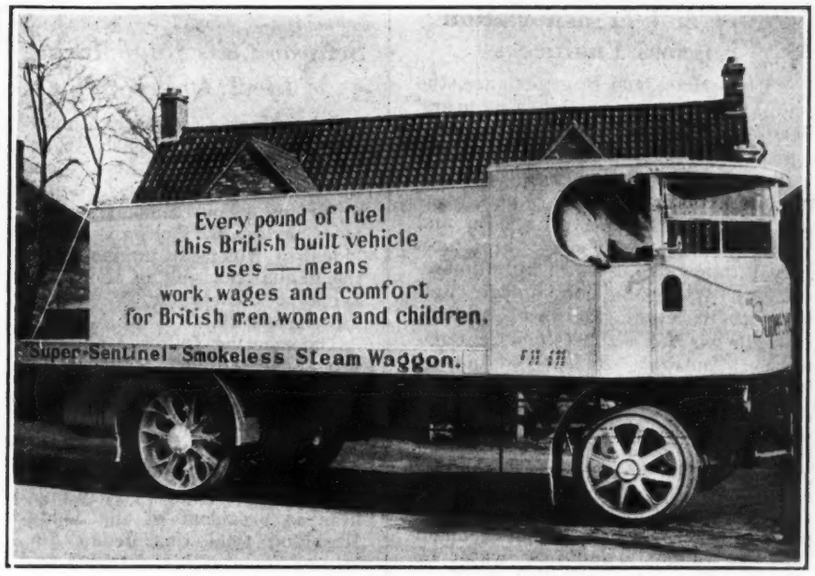
As to the scope of the injunction, it was said that the decree appealed from was in form the decree approved by this court in the Carbon Fuel Case, 288 Fed. 1020. An in so far as it enjoined peaceful persuasion in inducing employees to break their contracts of employment, it was shown to be authorized by the decision of the Supreme Court in Hitchman Coal Co. vs. Mitchell, 245 U. S. 229.

Defines Scope of Decree

On this point the court said: "It is said, however, that the effect of the decree, which, of course, operates indefinitely in future, is to restrain defendants from attempting to extend their membership among the employees of complainants who are under contract not to join the union while remaining in complainants' service, and to forbid the publishing and circulating of lawful arguments and the making of lawful and proper speeches in advocating such union membership.

"They say that the effect of the decree, therefore, is that, because complainants' employees have agreed to work on the non-union basis, defendants are forbidden, for an indefinite time in the future, to lay before them any lawful and proper argument in favor of union membership. If we so understood the decree, we would not hesitate to modify it. As we said in the Bittner case, there can be no doubt of the right of defendants to use all lawful propaganda to increase their membership.

"On the other hand, however, this right must be exercised with due regard to the rights of complainants. To make a speech or to circulate an argument under ordinary circumstances dwelling upon the advantages of union membership is one thing. To approach a company's employees, working under a contract not to join the union while remaining in the company's service, and induce them in violation of their contracts to join the union and go on a strike for the purpose of forcing the company to recognize the union or of impairing its power of production, is another and very different thing."



Helping One of Britain's Basic Industries

This is one of the "stunts" tried to bring home to the "man in the street" the importance of helping the British coal industry to get on its feet. The picture was taken near Regent's Park, London.

Co-operative Research Work With British Extended

Co-operation with the British Government on certain types of research work is to be continued by the U. S. Bureau of Mines during the next fiscal year. During the past year the Bureau has had two of its research men in England. Reinhardt Thiessen has been working on the structure of coal and G. St. J. Perrott has been engaged in co-operative work on the testing and classification of explosives. On the other hand, the British have had Dr. H. F. Coward working with the technical staff at the Pittsburgh experiment station on the explosibility of gas. Dr. W. Francis will soon arrive in this country for a year's work on the co-operative program.

The Bureau in the near future expects to send Lee C. Ilsley to England for co-operative work on electrical equipment designed for service in gaseous atmospheres. It is also probable that Dr. Dorsey Lyon, the Bureau's chief metallurgist, will make a trip to Europe this year to familiarize himself with the progress being made there in the study of metallurgical problems. He also will confer with British officials in regard to the co-operative work. About Jan. 1 a general official of the Bureau probably will visit England to discuss the program which is to be followed during the fiscal year beginning July 1, 1928.

Power and Transportation Engross Engineers

With perhaps 100 in attendance, the regular meeting of the Engineers' Society of Northeastern Pennsylvania was held in the Chamber of Commerce Building, Scranton, Pa., Saturday evening, April 23. Three papers bearing on modern power generation and transportation problems were presented following an excellent dinner.

E. G. Whitmore, mechanical engineer of Scranton, the first speaker, took for his subject "Automatic Combustion Control." He covered in succession the following salient points:

As fuel represents about 75 per cent of power cost, almost any means that can be adopted for its reduction is well justified. One of the greatest losses sustained in any power plant arises from improper or excessive air supply. Ideal conditions would demand that the fuel, air and feed water be all controlled automatically.

At present three methods are available for controlling these various factors—hand-firing, variable load regulation and automatic control. With the shortcomings of hand-firing everyone is familiar. With this means of operation the excess air frequently amounts to 200 per cent and the losses are proportionate. Variable load regulation gives better results, but adjustments are made by hand in accordance with load indications, with the result that they are never absolutely accurate and always subject to time lag. One fairly successful means of coping with this difficulty is known as the base-load method. When this method is followed several boilers are kept steaming steadily while a few are so regulated as to take the peaks of demand.

Pressure Is Controlling Factor

Automatic regulation depends upon the steam pressure and necessary adjustments are all made simultaneously in accordance with its changes. The rate of feeding, however, should not be changed instantly as a high rate of steaming usually gives a false water gage. Experiments have shown that the hot gases from the fuel move through the boiler at a speed of from 20 to 60 ft. per second, so that they give up their heat to the boiler surfaces in from one to two seconds. Close pressure regulation, regardless of its desirability, is no criterion of efficiency.

The generation of steam in a modern plant is a problem in mass production. Manual control of boilers entails overtravel, which automatic regulation largely avoids.

The second paper of the evening, on "Modern Locomotive Development," by S. S. Riegel, mechanical engineer of the Delaware, Lackawanna & Western R.R., traced the improvements made in locomotive design during the last quarter of a century. A locomotive of today may develop as much as 5,000 hp. This is accomplished in a space that is 10 ft. wide, 15 ft. high and approximately 80 ft. long. High pressures or those ranging from 200 to 400 lb. per square inch are now common practice.

Schwab Calls John Markle Ideal American

John Markle, anthracite operator, who retired recently to devote the remainder of his life and the bulk of his fortune to philanthropy, heard himself praised by Charles M. Schwab as the "ideal of American manhood," at the annual meeting of the Pennsylvania Society, in New York City, April 19.

The meeting followed a luncheon at the Waldorf, at which Mr. Schwab presented a resolution of eulogy to Mr. Markle from the society. The Rev. Malcolm J. McLeod, pastor of the Collegiate Church of St. Nicholas, after reviewing Mr. Markle's rise in business as president of the Jeddo-Highland Coal Co., Jeddo, Pa., told of some of his charities and revealed the wide scope of the Mary and John Markle Foundation, now being incorporated at Albany.

Mr. Schwab greeted Mr. Markle as a friend of many years, and "my ideal of what the representative man of this United States should be." A man who started early in industry and fought his way to eminence and fortune, Mr. Schwab declared, his friend had "always tried to appear as a rough-neck sort of fellow," but beneath a rugged exterior there beat "a heart of gold."

The resolution presented to Mr. Markle from the society labelled him "one of our greatest Americans." Dr. MacLeod told of Mr. Markle's gift of $100,000, the entire amount sought in a campaign for the Jerry McAuley Mission.

In order to increase the efficiency of the machine the weight of the undergear has been decreased and that of the active elements increased. Various refinements that have been introduced in recent years have lowered the steam consumption from 28 to 21 and even in one special case to 15 lb. per horsepower hour. Among these improvements might be mentioned the following: The superheater, the brick arch, an increased size of combustion chamber, the mechanical stoker, the feed water heater, and compounding of the cylinders or cut-off at part stroke.

The third paper of the evening, presented by a representative of the Franklin Supply Co., Scranton, showed how this deadweight could be utilized. To this end a small auxiliary engine, known as a "booster," is attached to these various parts so arranged that it automatically goes out of gear when a certain speed is attained. This device is particularly useful in starting and on grades. Here it adds from 7 to 20 per cent to the tractive effort of the locomotive. This means that correspondingly larger loads can be hauled. This in turn means bigger revenues and better service.

Discuss Electrical Problems In Relation to Mining

More than 400 members attended the Middle Eastern District Regional Meeting of the American Institute of Electrical Engineers held at Bethlehem, Pa., on April 21-23. This meeting, the first of its kind held in the Lehigh Valley, was opened by Vice-President A. G. Pierce, who also served as chairman of the various sessions. Although the majority of the papers presented were of especial interest to electrical engineers, there was much in all of them that could be applied to the mining and preparation of coal.

Perhaps the most interesting paper from the viewpoint of the mining man interested in electricity was that presented by O. K. Marti and Harold Winograd of the American Brown Boveri Corporation entitled "Mercury Arc Power Rectifiers." Dealing specifically with the steel-enclosed type of rectifier, Mr. Marti stated that these apparatus are rapidly gaining in favor and gradually replacing other converters in all fields of application. This is primarily due to the fact that mercury arc rectifiers are more efficient and easier and more reliable to operate than rotary converters. They also are capable of producing direct currents of high voltages and are particularly adaptable to services subjected to large fluctuations in load and to heavy and short current peaks.

E. B. Wagner, electrical engineer of the Lehigh Valley Coal Co., read a paper entitled "Application of Electric Power to Anthracite Mining" in which he stated that electricity had successfully met all mine-power requirements with the exception of that of hard-rock drilling. He pointed out the many advantages of electric power for mine work and explained various applications that realize these advantages to the fullest extent.

In commenting upon Mr. Wagner's paper, Mr. Roper of the Glen Alden Coal Co. stated that his company probably was the most highly electrified of any in the anthracite field and that its mines employed 506 electric locomotives and but 50 mules, as well as 1,300 alternating-current and 900 direct-current motors, to produce approximately 10,000,000 tons of coal annually.

In addition to these, papers also were presented on the application of electricity to cement and steel rolling mills; developments in oil circuit breakers and large induction motors; intercommunication in industrial plants; methods of reducing losses in electric systems and the effects of lightning on transmission lines; and the committee report on voltage standardization. The "preferred" voltage ratings for alternating-current systems, as proposed in this report, are as follows: 115, 220, 460, 2,300, 4,000, 13,200, 33,000, 66,000, 132,000 and 220,000 volts. These recommendations have not as yet been acted upon by the Institute.

An informal dinner was held on Thursday evening at which addresses were made by several prominent men of the industry. Saturday was occupied with various inspection trips.

Dubious Outlook for Union Success In Strike, Is Belief in Washington; Only Hope Hangs on Better Prices

By Paul Wooton
Washington Correspondent of *Coal Age*

Labor is much discouraged at the prospects presented by the coal strike. It can hope for no important break in the ranks of the operators until coal can be sold at a profit. The union can have no hope of signing up more tonnage unless the price of coal goes up. It is the poor prospect for increased coal prices which makes for the discouragement. In addition, it is recognized that some of the operators are determined to go non-union even if it takes a year to do it.

It is obvious that the consumers of coal under present circumstances are not going to be stampeded or thrown into a panic. Their stockpiles are too big and information reaching Washington is that only a small amount of current consumption is coming from the reserves. Indications, it is declared, are that this policy will continue until the present emergency shall have passed. With consumers insisting on keeping themselves in the comfortable position they now occupy there seems little chance of bringing about that psychology which is essential to most material increases in coal prices. It is this situation which makes the outlook so hopeless for the union.

The belief still prevails in quarters outside the government that an effort will be made to bring about federal intervention. The fact that the administration has steeled itself against any such effort is not expected to prevent the attempt. The impression has gained ground that the union has selected the Department of Labor as the possible weak spot in the federal armor, but just how it will set about to do the seemingly impossible is a question to which no answer is forthcoming.

Union Operators Face Losses

While the prospects are such as to make the union anxious to get the strike behind it, there also are powerful influences at work on the union operators. They face a further loss of their market to the non-union producers. As the strike drags along its uneventful way consumers in union markets will come to the conclusion that it is to be a long drawn-out affair and more and more will be persuaded to take advantage of the inducements offered for long-time contracts. This means that the longer the mines are shut down the harder will be the task of regaining markets. An expression of opinion which has come to the attention of officials here is as follows:

"Any operator who is serious about negotiating a reduction would favor sitting in with the committee, passing the matter of wages for the time being, attempting to modify conditions which some operators claim cost more than the difference between the 1917 and the 1924 scale. Thereafter the wage matter could be returned to and in the meantime Mr. Lewis would have a chance to educate his people, perhaps, to the necessity of a reduction. This privilege they denied him and he would be unwise were he to let the operators saw off the limb on which he is sitting. Such is not the way choice contracts or big business trades are made.

"The real trouble is that the salesman started encouraging the accumulation of coal several months ago. With the country saturated there is no work to do, hence the operator does not want to talk settlement at the present time. Later on, when the demand picks up, individuals will sign and the whole thing will be closed out in two weeks, when both the union and union operators will occupy a worse position than they might otherwise have found for themselves."

Officials, however, are thoroughly familiar with the more generally held view that there is little use of conferring, so long as the union holds to its position that there must be no reduction in the scale and the operators take the position that there must be such a reduction. They also are familiar with the contention that concessions on the loader scale and on dead work, no matter how far-reaching, will benefit a minority only and would not meet the general situation.

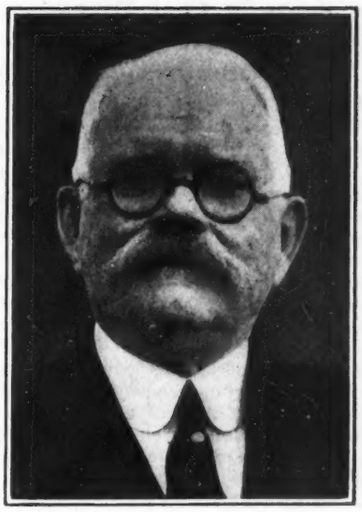
EDITOR'S NOTE—*The foregoing Washington letter reflects certain views of official Washington. Due to the fact that policy as a rule prevents government officials from permitting their views being quoted directly, the authority for these reports is necessarily somewhat vaguely referred to. The views reflected are not those of any one group of officials, but of different men, in the legislative and executive departments. There is no necessary connection between their views and* COAL AGE *editorial policy; neither do they necessarily represent Mr. Wooton's personal views. It is felt that the opinions thus faithfully reflected will be of great interest to the industry. Where opinions are cited from sources outside of the government, the source will be specifically stated.*

Briquet Output Increases

Production of fuel briquets in the United States in 1926 totaled 995,332 net tons, valued at $8,533,179, according to figures issued by the U. S. Bureau of Mines. This compares with 839,370 tons, valued at $7,128,404, in 1925. Output has been growing steadily since 1907, when the first statistical survey showed a total of 66,524 tons.

Marked variation in the average values in different states is shown, the figure in Pennsylvania last year being $6.74 f.o.b. plant, as against $8.86 in the Central States.

The total quantity of raw fuel used in the manufacture of briquets last year was 971,135 tons. Of this, 44 per cent was anthracite and semi-anthracite, 47 per cent was semi-bituminous and bituminous coal and semi-coke, and 9 per cent was sub-bituminous coal and carbon residue from the manufacture of oil gas.



John Markle

Characterized by Charles M. Schwab as "the ideal citizen," John Markle, retired anthracite operator, says he believes that every man who has accumulated wealth should give consideration to the assistance his wealth may afford his fellow man. The John and Mary R. Markle Foundation, founded by Mr. Markle, is to devote its funds to the creation and maintenance of medical research centers, hospitals, libraries, educational agencies and charitable institutions.

Upholds Wharfage Charges At Hampton Roads

Present wharfage charges on bunker and cargo coal transshipped over railroad piers at Hampton Roads are not unreasonable in the opinion of Examiner Jesse C. Harraman, who has made a tentative report to the Interstate Commerce Commission in *Southern Transportation Co. et al vs. Norfolk & Western Ry. Co. et al.* The charges on bunker coal are $11 for coastwise and $30 for foreign-bound ships.

In defense of these charges the railroads pointed out that it took much longer to load bunker than cargo coal. They claimed, therefore, that the charges, not published in their tariffs until a previous decision in this case in which the Commission assumed jurisdiction, should be commensurate with the service rendered. Special emphasis was laid upon the slowing up of pier operations when vessels were taking fuel. Bunker coal was loaded at the rate of 60 to 115 tons per hour; cargo coal in many instances at a rate exceeding 1,000 tons per hour.

Pere Marquette Orders Cars

The Pere Marquette R.R. has ordered 250 steel hopper cars from the Standard Steel Car Co. and 250 gondolas from the Illinois Car & Manufacturing

The New River & Pocahontas Consolidated Coal Co., operating in West Virginia, has ordered 200 mine cars from the Watt Car & Wheel Co.

The Union R.R., a subsidiary of the United States Steel Corporation, has awarded a contract to the Greenville Steel Car Co. for repairing 670 hopper cars.

Accidents in Coal Mines Take 178 Lives in March; Three-Month Total Drops

Accidents at all coal mines in the United States during March, 1927, caused the death of 178 men, according to reports furnished by state mine inspectors to the U. S. Bureau of Mines. The production of coal during the month was 66,279,000 tons, of which 60,181,000 tons was bituminous and 6,098,000 tons was anthracite. Of the 178 fatalities reported, 139 were in bituminous mines and 39 in anthracite mines. Fatality rates based on these figures were 2.31 and 6.40, respectively, while the industry as a whole showed a rate of 2.69 per million tons of coal produced.

An explosion on March 30 at Ledford, Ill., caused the death of 8 men. This is the first major disaster—that is, a disaster causing the death of 5 or more men—that has occurred during the present year. During the first three months in 1926 there were 7 major disasters, killing 189 men.

Records for the first three months of 1927 show 561 fatalities at coal mines as compared with 693 for the corresponding period of 1926. The production of coal in these periods was 188,478,000 tons and 157,422,000 tons, respectively, indicating a fatality rate for 1927 of 2.98 and for 1926 of 4.40 per million tons. The fatality rate for the three-month period of 1927 was 2.58 for bituminous mines alone, based on a production of 169,967,000 tons and 438 fatalities, and 6.64 for anthracite mines, based on a production of 18,511,000 tons of coal and 123 fatalities. In 1926 the rate for this period for bituminous mines, based on 146,376,000 tons and 641 fatalities, was 4.38, while anthracite showed a rate of 4.71 based on 11,046,000 tons and 52 fatalities.

Comparing the figures for all mines for the three-month period, January to March, with those for the same months last year, a reduction during the present year is noted in the per-million-ton fatality rate for falls of roof and coal, haulage, and gas or dust explosions, while explosives and electricity each showed a slight increase. The comparative rates were as follows:

	Year 1926	Jan. Mch. 1926	Jan. Mch. 1927
All causes	3.789	4.402	2.976
Falls of roof and coal	1.829	1.829	1.560
Haulage	.650	.680	.578
Gas or dust explosions	.636	1.302	.191
Explosives	.143	.107	.127
Electricity	.143	.114	.127

Haulage Rope Breaks Once in 11 Years

The haulage rope in the Caledonia colliery of the Dominion Coal Co., Glace Bay, N. S., broke recently for the first time since 1916. Although the rope, which is more than 32,000 ft. long, gave way at 2 o'clock in the afternoon, it was removed and replaced by a new one in time to resume work the next morning at 7 o'clock. It had been the intention of J. R. Dinn, superintendent of the mine, to change the cable on Good Friday, when the colliery would be idle.

Summer Coal Mining Course At Carnegie Tech

A four weeks' course in coal mining will again be given by the Carnegie Institute of Technology, Pittsburgh, Pa., during the coming summer in cooperation with the Pittsburgh station of the U. S. Bureau of Mines, according to an announcement. The course is outlined to be of benefit to young coal miners who are ambitious to increase their efficiency and earning power.

The course will begin June 13 and will end July 9. Under special arrangements, an examination for firebosses, assistant mine foremen and mine foremen will be held at Carnegie Tech by the Pennsylvania State Department of Mines immediately following the course, on July 11, 12 and 13. The course is planned to prepare each student to pass these examinations.

At the morning sessions, which will be conducted at the Carnegie Institute of Technology, the work will cover instruction in mine laws and regulations, ventilation, gases, explosives, timbering, arithmetic, safety lamps and methods of working. Afternoon periods at the Bureau of Mines will be devoted to study in mine-rescue and first-aid training, lectures and movies on mine safety, and coal-dust explosion and permissible explosives demonstrations at the Experimental Mine.

Each student who satisfactorily completes the course will be awarded a certificate by Carnegie Tech and a mine-rescue and first-aid certificate by the U. S. Bureau of Mines.

Coal-Mine Fatalities During March, 1927, by Causes and States

(Compiled by Bureau of Mines and Published by *Coal Age*)

State	Underground												Shaft					Surface							Total by States	
	Falls of roof (coal, rock, etc.).	Falls of face or pillar coal.	Mine cars and locomotives.	Gas explosions and burning gas.	Explosives.	Suffocation from mine gases.	Electricity.	Animals.	Mining machines.	Mine fires (burned, suffocated, etc.).	Other causes.	Total.	Falling down shafts or slopes.	Objects falling down shafts or slopes.	Cage, skip or bucket.	Other causes.	Total.	Mine cars and mine locomotives.	Electricity	Machinery	Boiler explosions or bursting steam pipes	Railway cars and locomotives	Other causes.	Total.	1927	1926
Alabama	2		1				3					6													6	5
Alaska																									0	0
Arkansas																									0	1
Colorado	3	1	2					1				7													7	6
Illinois	12		1	8							1	22											1	1	23	11
Indiana	5		2									7													7	6
Iowa		1										1													1	0
Kansas	2											2													2	1
Kentucky	3		2	1								6													6	14
Maryland																									0	0
Michigan																									0	0
Missouri																									0	0
Montana																									0	1
New Mexico	2											2													2	3
North Dakota																									0	0
Ohio	5		1									6													6	9
Oklahoma	1						1					2													2	2
Pennsylvania (bituminous)	21	1	5	4			1					32													32	24
South Dakota																									0	0
Tennessee							1					1													1	1
Texas																									0	0
Utah	1						1					2													2	0
Virginia	2				1							3													3	3
Washington																									0	2
West Virginia	20	3	11		1		1		1			37							1					1	38	53
Wyoming	1											1													1	3
Total (bituminous)	80	6	25	13	2		8	1	1		1	137							1			1	2		139	146
Pennsylvania (anthracite)	15	9	3	3	2	3					2	37								1			1	2	39	40
Total March, 1927	95	15	28	16	4	3	8	1	1		3	174							1	1			2	4	178	
Total March, 1926	79	13	38	24	7	1	3	1	1		2	169		2	2		4	2	1			2	8	13		186

News Items From Field and Trade

ALABAMA

Kimberly No. 3 Resumes.—The Central Iron & Coal Co. has resumed operations at its No. 3 Kimberly mine, which had been closed down for several years. This mine is a slope opening on the Jefferson seam in Jefferson County. Kimberly No. 2, at the same location, is producing coal from the Black Creek seam. The entire production of the company is used at its furnace and coke oven plants at Holt.

The Franklin Coal Mining Co. is sinking a rock slope to serve as a manway and airshaft for its Powhatan mine.

INDIANA

Miners Receive Back Pay.—Fred I. Conyers, co-receiver for the Pike County Collieries Co., Oakland City, has paid more than 250 miners of the company approximately $24,000 in wages due for the latter half of March. The payment was made when a certified check for $30,000 signed on behalf of the Dixie Vein Coal Co. was received by the clerk of the Gibson Circuit Court. The pay due April 7 was held up when officials of the Dixie company asserted that they had a right to make other disposition of coal sales money in its possession, following which the judge threatened Martin E. Lowish, co-receiver of the Pike County company and an officer of the Dixie company, with contempt of court if the miners were not paid.

The first examination under the new state mining law for the certification of competency of hoisting engineers, mine bosses and firebosses, recently was conducted at Terre Haute by Albert C. Dally, state mine inspector. About 200 applicants for certificates as firebosses, 75 for mine boss and 50 for engineers took the examination. The new law requires that all room bosses, in addition to being certified mine bosses, also must be certified firebosses.

May Sift Francisco Charge.—Charges contained in the report of the Coroner of Gibson County regarding the Francisco mine explosion near Princeton last year, are expected to be discussed at a conference to be held in Indianapolis shortly by Arthur L. Gilliom, Attorney General, and the prosecutor of the county. The report of the Coroner, which also was signed by Albert C. Dally, state mine inspector, contained the conclusion that the explosion was due to law violation on the part of some one. About thirty men were killed. The last Legislature passed a resolution asking that in view of the verdict of the Coroner, the grand jury make an inquiry in an attempt to fix the criminal responsibility for the accident.

The Republic Coal Co., a mining organization of Sullivan, has filed a preliminary certificate of dissolution with the Secretary of State.

Possum Ridge Mine Flooded.—Recent heavy rains have caused considerable water to soak through into the Possum Ridge coal mine shaft, near Boonville. The mine has been closed down and probably will not be able to resume operations until the rains cease and all the water has been pumped from the entries. The mine, which is one of the oldest in southern Indiana, recently was sold by Jeppe Bertelsen of Evansville to the Hayden Coal Co., a Kentucky corporation having headquarters in the Citizens' National Bank, Evansville.

Reforesting Strip Lands.—A large force of men are at work setting out many thousand trees on the John Meagenhardt farm in Owen County, just east of the Clay County line. This, the first experiment to be made by the Indiana State Conservation Commission in reforesting waste coal lands, is being made on one of the first strip mines to be opened in southern Indiana.

One Bid for Francisco Property.—The property of the Francisco Mining Co. was sold at receiver's sale in the court house at Princeton April 15 by order of court. The property went to LaPlante & Welch, of Vincennes, holders of $184,000 worth of receiver's certificates. The bid was $280,000 plus any excess amount necessary to meet the receiver's costs. The purchase price will be in the neighborhood of $300,000 when all claims have been settled. Only one bid was received. The property at the time of the receivership was appraised at $1,600,000. The purchasers are a bond firm and it is expected they will dispose of the property. The property consists of Francisco mine No. 1, at Francisco, and No. 2, east of Princeton. Thirty-seven men lost their lives in the latter shaft last December in an explosion.

Form Wagon Mine Sales Company.—The Lutz Coal Sales Co., headed by George A. Lutz, Boonville, has been launched with Mr. Lutz and Perry Lowell as chief owners. The company will take over the output of many of the wagon mines in Warrick County that have been operated steadily since the starting of the strike on April 1. In the event that the strike continues, it is expected that every wagon mine of any consequence in Warrick County will be operated all summer. Most of the coal is hauled in trucks and wagons to Boonville, where it is shipped out by rail.

To Expand Patoka Operations.—The Patoka Coal Co., operating in Pike County, has ordered an electrically equipped stripping shovel, which will be added to its two shovels being moved to the new mining property six miles west of Petersburg. When the new machine is assembled the company will have the greatest stripping output in the Middle West, it is said. The company has paid $170,000 during the past three weeks for 1,700 acres of stripping lands and tests are still being made and additional acreage will be bought. The land now controlled by the coal company will be sufficient to keep the company mining coal for the next ten years. The company also is leasing a large tract of land just west of the Evansville & Indianapolis R.R. at Clarks Station, three miles south of Petersburg.

The Green Mound coal mine, near Washington, operating under a receivership, has been closed down as a result of an alleged incendiary fire which damaged the warehouse. The fire has caused the mine to be shut down until repairs can be made. This mine recently was the cause of difficulty in the ranks of union miners when an attempt was made to operate it cooperatively.

KENTUCKY

L. & N. Coal Needs Climb.—Some interesting figures recently compiled show coal needs of the Louisville & Nashville R.R. for the past three years. In 1924 the road used a total of 72,294 carloads; in 1925, 76,750, and in 1926, 80,424 carloads. For 1926 the eastern Kentucky field was called upon for 40,710 cars; the western Kentucky field, 15,913 cars; Illinois, 288 cars, and Alabama, for 23,392 cars of fuel coal and 121 cars of smithing coal, making a total of 80,424 cars.

The Southeast Coal Co., at Whitesburg, suffered loss of its supply house and came near losing its tipple and other buildings in a blaze on April 11.

Big Sandy Appeal Lost.—The federal Court of Appeals at Cincinnati upheld the decision of Federal Judge A. M. J. Cochran in a suit of the Big Sandy Co. against J. B. Robinson, trustee for the bankrupt Kentucky Elkhorn Coal Co., denying the Big Sandy company's claim for forfeiture

of a lease held by the bankrupt concern on coal properties of the Big Sandy Co.

MINNESOTA

The Great Lakes dock at Superior received the first cargo of coal in the new season. The steamer *H. P. Werner* unloaded a cargo of bituminous there on April 17. Thirteen cargoes were received the next day, distributed between the following docks—North Western, 3; Pittsburgh, 2; Reiss, 1; Hanna, 1; Inland, 2; Northern, 2; Great Lakes, 1, and Clarkson, 1.

The Zenith Furnace Co. is planning upon a greatly increased production of domestic coke at its Duluth ovens during the coming season to take care of a broad demand that has been developing.

The Algoma Coke Co., of St. Paul, has filed articles of incorporation, with a capital stock of $50,000. The incorporators are Vincent L. O'Connor, Paul C. Murphy and Earl M. Waldorf, all attorneys of St. Paul. They are obviously temporary representatives of the real factors, who will be made known later.

OHIO

The tipple of the Moonshine mine, 3 miles west of Barnesville, was destroyed by fire recently. The mine, which employs 30 men, is the only non-union operation in Belmont County and one of the two in the entire eastern Ohio field.

Foreclose Blanchard Holdings.—An order of foreclosure and sale of property for general distribution was issued by the courts of Zanesville against the extensive holdings of the Blanchard Mining Co., which went into receivership Dec. 17, 1924. The action to foreclose was brought by the Pennsylvania Trust Co. of Pittsburgh.

Having been passed by both houses of the Assembly, House Bill No. 217, providing for a number of changes in the regulation of Ohio mining properties, is now up to Governor Donahey for approval or veto. One important change made in the bill at the last moment was to designate district deputy mine inspectors to hold examinations for foremen, firebosses and mine bosses, instead of creating a special examining board for that purpose. Only applicants for first-class certificates must be examined in the latter manner, as applicants for second-class certificates can be licensed upon recommendation of the operating company.

PENNSYLVANIA

The new breaker of the Public Service Coal Co., near Marshwood, will begin operations next week. This company has taken over interests in coal tracts held by the Bell estate. In addition to building a modern breaker the concern has provided a reservoir capable of holding 38,000,000 gallons of water. The company is building its own railroad from the mine to a connection with the Erie R.R. on the Moosic branch. Edward Scott, once a breaker boy, is president of the company and W. E. Sunday, for years with the Pennsylvania Coal Co., is vice-president and general manager.

Guards Against Timber Problem.—The Susquehanna Collieries Co. is in the midst of the largest tree-planting campaign in many years. Ten thousand saplings are being set out by this company with a view of having its timber supply replenished in later years. William Geise, division engineer of the company, says the company will have no timber problem confronting it twenty-five years from now.

The Philadelphia & Reading R.R., is now using a 50 per cent mixture of hard and soft coal on its passenger engines. Some months ago the company was unable to obtain a sufficient supply of buckwheat coal and on this account had to use soft coal in its engines entirely. This has now been made unnecessary due to the supply of small sizes of anthracite.

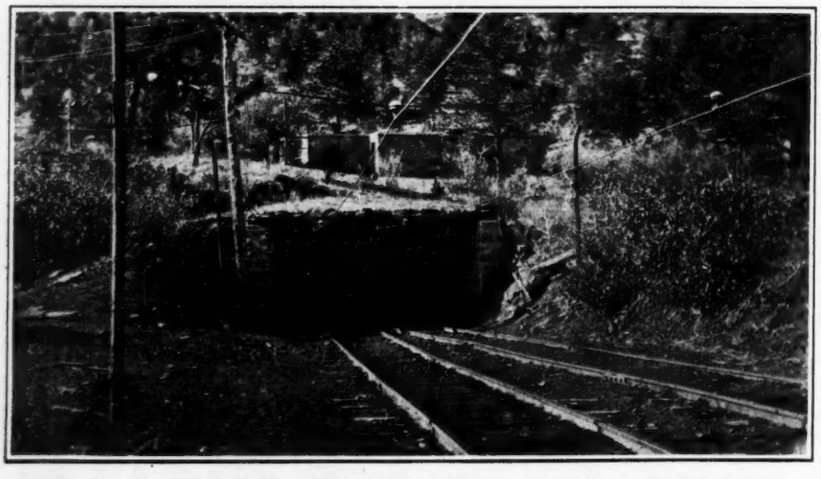
Glen Alden Plants More Trees.—Thousands of trees have been planted on the West Mountain near Scranton by the Glen Alden Coal Co. This company set out several years ago on a campaign of reforestation. At that time thousands of trees were started on the mountain. Now another batch has been planted there. In addition to planting new trees the coal company also is using special means to prevent forest fires on the mountain and to fight them when they break out.

To "Boost" Hard Coal.—The use of hard coal is now to be promoted by salesmen connected with the Scranton Post of United Travelers. At a recent meeting of the salesmen it was resolved that the salesmen should preach the use of anthracite in their business travels outside the hard-coal field. In this way they expect to help regain old markets for the operators and thus provide steadier work for the men at the mines, all of which leads them to believe business conditions throughout the anthracite field will be greatly improved. Posts of the travelers in other coal region towns probably will be asked to join in the movement.

Reading Protests Tax Boost.—The Philadelphia & Reading Coal & Iron Co. has appealed to the State Supreme Court against the action of Columbia County Commissioners in boosting the valuation of coal lands. The commissioners made an unusual boost in the valuation after which the lower court was appealed to. This court reduced the commissioners' figures but even so allowed a 36 per cent advance. The coal operators say the valuation is excessive and unfair. Other coal companies in Columbia County intend to appeal their assessments if the Philadelphia & Reading concern is upheld in the highest court of the state.

Cosgrove-Meehan Earnings Up.—The Cosgrove-Meehan Coal Corporation reports earnings for 1926 of $424,093 after all charges, including preferred dividends, equal to $1.70 a share on the 237,939 shares of no par common stock. This compares with earnings of $183,481 in 1925, equal to 68c. a share. The company produced 2,676,919 net tons in 1926, against 1,944,488 tons in 1925. Of the company's 6½ per cent bonds, $255,000 have been retired by sinking fund, leaving $2,245,000 outstanding.

The tipple of the Cool Spring Coal Co. at Ramsaytown, Jefferson County, was totally destroyed by fire on April 13, with considerable loss, which is covered by insurance. The origin is mysterious. The mine, which is owned by the Shawmut Mining Co. and is under lease, had resumed operations two days before the fire, after a few days' idleness caused by a strike. The tipple is to be rebuilt immediately.



Portal of No. 8 Mine, Phelps Dodge Corporation, Dawson, N. M.

The track comes out of one mine and, after crossing a small, well-wooded canyon, enters No. 8. Electric trolley locomotives are used. Fan house can be seen in the rear. Large quantities of adobe are scattered in the roadways of the mine.

UTAH

Natural Gas for Utah.—Utah is to have natural gas from the Baxter Basin and the Hiawatha Dome gas fields of the Rock Springs district of Wyoming. The gas is to be used for both domestic and industrial purposes and for heating as well as for cooking. An official of one of the large concerns interested in the project said that details regarding the piping of the gas to

Southwestern Coal Mining Plant Operated Electrically

One of the operations of the Bernice Anthracite Coal Co., located at Russellville, Ark. The company, which has its main office at McAlester, Okla., has three mines at Russellville, for which it purchases power. All of them are slope operations in the Hartshorne seam, which is 42 in. thick at this point. The No. 1 mine employs about 200 men; No. 2 100, and No. 3, which is being developed, about 50.

Utah possibly would be decided upon in a month, but he thought it might be about 18 months before the gas could be used in Utah. The statement has been made that the gas can be purchased at 5c. per 1,000 cu.ft.

There is considerable interest just now in Utah coal land leases, due to recent talks of a big new market for Utah coal on the Pacific Coast. The land office in Salt Lake City is being flooded with applications and inquiries.

Harvey H. Cluff, Attorney General of Utah, will represent the state before the U. S. Supreme Court in the latest developments of the Carbon County land case. The case, which has been pending before the federal courts for several years, concerns a dispute between the state and the Interior Department over the interpretation of the enabling act which granted to the state four sections in every township for the support of its common schools. The dispute involves 5,564.28 acres of valuable coal lands.

WEST VIRGINIA

New coal companies organized in West Virginia in March include the Greenbrier River Smokeless Coal Co., Caldwell, with a capital stock of $25,000; Seminole Fuel Co., Clarksburg, $50,000; Arcola Smokeless Coal Co., $10,000; Riverton Coal Co., Charleston, $100,000; Pittsburgh-Monongahela Coal Corporation, Morgantown, 10,000 shares of no par value; Monongahela Fuel Co., Fairmont, $1,443,800 and 25,000 shares of no par value; Lincoln Mining Co., Charleston, with 2,000 shares of no par value; Tere Coal Co., Teter, $25,000; Cosgrove-Meehan Gas Coal Co., Johnstown, Pa., 2,000 shares of no par value.

The Consolidation Coal Company has begun loading coal over its new steel tipple at the Pinnickinnick mine at Clarksburg. The structure has four tracks and is modern throughout. The tipple is so equipped that all sizes of coal can be prepared and has a capacity of about 3,000 tons a day.

Island Creek Earnings Mount.—The Island Creek Coal Co. reports for the quarter ended March 31, net profit of $861,500 after depreciation, depletion and federal taxes, equivalent after allowing for dividend requirements on $6 preferred stock to $1.32 a share earned on 594,005 shares of common stock outstanding at the end of the quarter. This compares with $597,804, or 88c. a share, on present share basis for the first quarter of 1926. Production for the quarter was 1,775,397 tons as contrasted with 1,383,429 tons in the same period of the previous year.

To Entertain British Notables.—Preparations are being made for the reception and entertainment of twenty British business men at Huntington on May 24, in connection with their inspection tour of the coal fields of Virginia and West Virginia. An official welcome to the visitors will be extended by Governor Howard M. Gore. The British business men are visiting the two Virginias at the instance of the Virginia State Chamber of Commerce. Among the visitors will be Gilbert C. Vyle, president of the Association of British Chambers of Commerce and managing director of W. T. Avery, Ltd., of Birmingham, England. There will also be among the visitors representatives of the Association of British Chambers of Commerce, the Chamber of Shipping of the United Kingdom and the British Industries.

Heavy Tax on Labor Agencies.—A bill has been passed by both branches of the West Virginia Legislature—Senate Bill 293—which imposes a license tax of $5,000 on every labor agency. It stipulates that any person or corporation who hires or contracts with laborers to be transported out of the state for employment in another state, shall be deemed a labor agency within the meaning of the clause. Any municipality within the state is empowered to impose a similar tax on any such labor agency, to limit the number of such agencies and at its option to include within its definition of a labor agency any person or corporation who hires or contracts with laborers to be employed by persons outside of such municipality. It was stated by Delegate John B. Easton of Wood County that no less than 10,000 laborers were taken from West Virginia last year, fully three-fourths of whom returned to the state. He asserted that the license tax had purposely been made large to discourage such labor agents as come into the state for the purpose of luring men to other states.

The New River Co. reports net income of $642,298, after charges and taxes, in 1926, equal to $8.84 a share earned on the outstanding 6 per cent. preferred stock, against $161,724, or $2.20 a share, in 1925. The increase is $480,574, or 297 per cent.

CANADA

Alleges Secret Coal Rate.—Col. Thomas Cantley (Conservative, Pictou) charged in the House of Commons last week that a secret rate existed on foreign import coal—a rate which was the lowest in Canada. "Since the issue of the Duncan report," Colonel Cantley said, "it has been discovered that for a number of years there has been in existence a secret rate on foreign import coal of 54c. per gross ton for 140 miles. The rate is 12.3 per cent of the class to which the traffic belongs, or 3.4 mills per ton mile, and is the lowest rail rate in force in Canada." It would be remembered, Colonel Cantley proceeded, that in January of last year members of the House asked the government to put into force a special rate of 3.5 mills per ton mile on a small tonnage of coal from Nova Scotia to Montreal as a temporary relief. This request was refused and the rate had never been available to Nova Scotia coal.

Among the Coal Men

Ten delegates were named last week by Governor Fields to represent Kentucky at the annual meeting of the Mine Inspectors' Institute, to be held at Charleston, W. Va., May 3-5. Those appointed were: W. H. Jones and Mart V. Allen of Lexington; James E. Boettger, DeKoven; John Gates, Central City; James A. Dixon, Pineville; John F. Brown, Hillsboro; J. S. Thompson, McRoberts; George W. Rose, Prestonburg; D. W. Hogan, Pikeville, and W. E. Wheeler, Cannel City. The governor also announced the appointment of Mr. Wheeler as assistant mine inspector, effective April 1 of this year.

P. M. Snyder of Mt. Hope, W. Va., widely known in coal mining and banking circles, has been chosen president of the C. C. B. Smokeless Coal Co., succeeding the late Robert Grant of Boston. Mr. Snyder had been occupying the posts of vice-president and general manager. The seven operations owned or controlled by the company are the Glen White, Stotesbury, Glencoe, Helen, Princewick, Long Branch and Pemberton.

J. W. Galloway was re-elected president of the Maryland Coal Co. at the recent stockholders' meeting in Baltimore, Md. The following directors also were named: Mr. Galloway, George Hewlett, Nathan T. Porter, Jr., J. E. McGowan and H. S. Rodgers, all of New York City; Gordon Smith of Baltimore, and Colonel George Paull of Pittsburgh, Pa.

J. F. Graves has been appointed traffic manager of the Consolidation Coal Co., effective May 1, with office at company headquarters in New York City. The company's office formerly maintained in the Continental Building, Baltimore, Md., has been transferred to the Munson Building, 67 Wall Street, New York City.

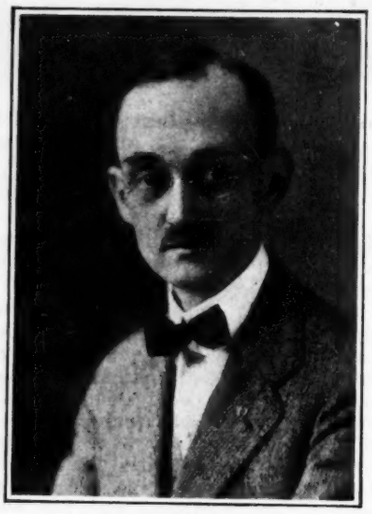
B. M. Clark, president of the Rochester & Pittsburgh Coal & Iron Co., who has been ill in a hospital in New York, is reported much improved. He is now able to sit up a greater part of the day and is expected to leave for his home in Indiana, Pa., within a few weeks.

A. Marshall Bell, a former coal operator in the Pittsburgh district, has been appointed a member of the Allegheny County (Pa.) Planning Commission.

J. F. Bohannon, general manager of the Elk Horn Coal Corporation, at Wayland, in eastern Kentucky, underwent an operation in Louisville on April 4 for removal of a growth upon his lip. He withstood the operation well and it is believed that he will make a speedy recovery.

H. S. Gay, Jr., chairman of the House Committee on Mines and Mining, was in charge of a party of members of the West Virginia Legislature, including members of the Senate and House Committees on Mines and Mining and on Taxation and Finance, who made a trip to the Logan coal field last April 23 and 24, as the guests of Mr. Gay and the Logan Chamber of Commerce. The party inspected several of the mines in the field, including the plant and mine of the Gay Coal & Coke Company, from which the first coal mined in Logan County was shipped.

H. H. Gardiner, president of the Pittsburgh & Shawmut Coal Co., is recuperating at Cambridge Springs, Pa., after an illness of several weeks.



John A. Garcia

A commission of engineers from the Allen & Garcia Co., Chicago, will leave New York May 11 on the *Aquitania* for the Donetz Basin coal fields of Russia to prepare designs and specifications of American type skip hoisting coal mines. The members of the commission are John A. Garcia, chief of the party; H. B. Cooley, structural engineer; A. C. Noe, geologist; John A. Garcia, Jr., mining engineer; H. F. Hebley, electrical enginer, and A. W. Holmes, mechanical engineer. It is expected that it will take three months after reaching Kharkov to complete the work and that the party will return to the United States in the late fall.

Edward H. Kellogg has been promoted from assistant general sales manager to general sales manager of the Mine Safety Appliances Co., Pittsburgh, Pa. The appointment became effective March 1.

W. R. Jillson, state geologist, has been appointed by Gov. W. J. Fields of Kentucky as delegate to the mining and metallurgical congress to be held at Montreal, Can., on Aug. 22.

George Patterson, president of the Cinderella Coal Mining Co., well-known West Virginia producers, has returned to his home in Huntington, W. Va., after several weeks spent in Florida recovering from influenza.

F. R. Sullivan has been appointed sales and traffic manager of the Moffat Coal Co., Denver, Colo., according to an announcement by S. M. Perry, president. Mr. Sullivan has had extensive experience in merchandising and traffic matters.

Dr. William S. Blaisdell, coal operator of Punxsutawney, Pa., is at his home again after being ill for a number of weeks in a hospital in Philadelphia.

Albert C. Dally of Knightsville, Ind., has been reappointed as chief Indiana state mine inspector by Governor Jackson. By virtue of his office, Dally is head of the state mining department. He was appointed Jan. 2, 1925, to fill out the unexpired term of Cairy Littlejohn, who died. The appointment, which takes effect May 1, is for four years.

James H. Pierce of Pottsville, Pa., for years prominent as an engineer in the anthracite industry, has sailed for Russia to make an investigation of the mines in that country and report to the Soviet Government on the best means to increase production and improve the mining industry in a general way. He probably will inspect mines in different foreign countries before returning to this country.

Obituary

David W. Evans, well known mine superintendent, died April 21 at West Pittston, Pa., following ten days' illness. He was born near Cymavon, Wales, in 1845, and at the age of seven began his life work in the mines of his native place. When he was 19 years of age, he came with his parents to the United States and settled in Pittston. In September, 1886, in partnership with Sabbath B. Williams, he reopened old Morgan Slope, in Upper Pittston, and mined coal for the local trade. Shortly afterward he took the position of general foreman of Keystone colliery near Laflin remaining there for two years. The next three years he spent as general inside foreman for the West End Coal Co., at Mocanaqua, Pa., which position he resigned to become general inside foreman at the William A. colliery, of the Connell Coal Co., at Duryea, Pa. On Aug. 1, 1894, he became superintendent of Stevens colliery, in Exeter borough, remaining there until the end of his long life.

Trade Literature

Crouse-Hinds Imperial Incandescent Headlight for Mine Locomotives. Ohio Brass Co., Mansfield, Ohio. Bulletin 219. Four-page folder illustrating and describing the type MB headlight, designed to give a narrow beam of light, with maximum pick-up distance, and a wide flow of light to illuminate the area in front of the locomotive.

The Lincoln Electric Co., Cleveland, Ohio, has issued the 1927 edition of its **Instruction Manual.** Covers the latest practices used in manual electric arc welding. Price, $1. Pp. 92; 5x7½ in.; illustrated.

Production And the Market

Price Bait Needed to Lure Industrial Consumers; Better Tone in Hard Coal Trade

While the stalemate between operators and miners in the Central Competitive Field and the Southwest holds up production in those areas, the industrial consumers still rely upon accumulated stockpiles for the bulk of their current requirements. In fact, in those states where non-union tonnage might reasonably be expected to replace union coal in the power plants of industry there is a distinct resistance to solicitation of business that is not baited with low-price offers.

This situation stands out in the markets of the Middle West. To date there has been no movement of eastern Kentucky or West Virginia high-volatile coals to take the place of Illinois and Indiana fuel. Mine stocks of the latter coals are substantial, although much of the unbilled steam tonnage on wheels in the mining fields of those states actually has been sold. Advancing quotations on western Kentucky steam sizes—the most logical substitute fuel—find the purchasing agents cold.

Tidewater Markets Inactive

Atlantic seaboard markets, still further removed from the scene of conflict, are marking time. The only substantial movement is on contracts. This indifference is reflected back into the mining fields of central Pennsylvania and West Virginia. In the Southeast, operators are in keen competition for business, with interest centered upon the lake trade. Up to last Saturday morning 35,544 cars had been dumped into vessels at the lower ports and 10,565 cars of lake coal were in transit.

Prepared sizes of West Virginia and Kentucky coal had a stronger price tone last week in widely separated inland markets and smokeless mine-run regained some lost ground in New England. Tidewater quotations on Pennsylvania coals in other seaboard markets were unchanged. The general tendency in slack was toward lower levels. *Coal Age* Index of spot bituminous prices on April 25 was 174 and the corresponding weighted average price was $2.11. Inclusion of Central Competitive Field storage coal in the averages held them up.

Production Still Lags

Bituminous production is still considerably under pre-suspension estimates. The output for the week ended April 16 approximated 8,017,000 net tons, according to the U. S. Bureau of Mines. Compared to the preceding week this was a decline of 238,000 tons, which was chargeable to the Easter holidays. Easter Monday saw a further cut of about 300,000 tons and loadings the following day were slightly less than on the same day the preceding week.

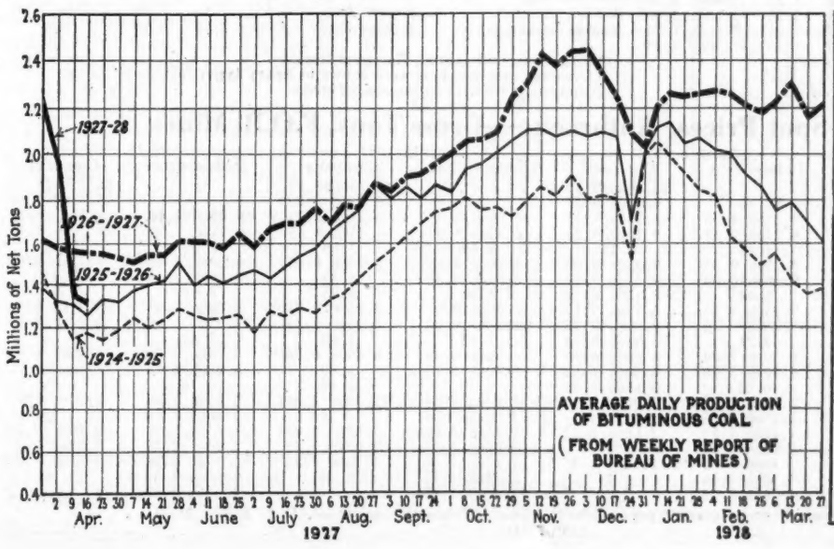
The labor controversy which has shut down operations in Illinois, Indiana, Ohio, western Pennsylvania, the Southwest and Iowa seems little nearer solution. Indiana stripping operators, producing about 20 per cent of the output of the state, have signed a new two-year contract with the union and plans are being laid for negotiations between union officials and the shaft-mine operators in that state. Elsewhere watchful waiting is the rule.

Better Tone to Anthracite

Despite Easter holidays anthracite production during the week ended April 16 reached 1,762,000 net tons—the highest weekly output recorded since Jan. 15. Much of this tonnage was moving out on orders placed earlier in the month. Current business outside of New York was light last week in the domestic grades. The steam side of the market is uneven in the matter of individual commitments on rice and barley.

Weakness was the outstanding feature of the Connellsville beehive coke market. Prices on furnace coke sagged 10c. There was no quotable change in the range on spot foundry grades, but the undercurrent was weaker. For the time being the labor situation in the Connellsville region appears stable. Nevertheless there are observers who are privately apprehensive that trouble may develop before the summer.

Actual business in steam coals in the Middle Western markets last week was light. The undercurrent, however, was very much disturbed by the outcome of



Estimates of Production

(Net Tons)

	1926	1927
BITUMINOUS		
April 2	9,040,000	11,054,000
April 9 (a)	9,420,000	8,255,000
April 16 (b)	9,306,000	8,017,000
Daily average	1,551,000	1,336,000
Cal. yr. to date (c)	167,225,000	188,280,000
Daily av. to date	1,861,000	2,094,000
ANTHRACITE		
April 2	1,549,000	1,127,000
April 9	1,793,000	1,651,000
April 16	2,086,000	1,762,000
Cal. yr. to date (c)	15,382,000	22,055,000
BEEHIVE COKE		
April 2	234,000	196,000
April 9 (a)	228,000	193,000
April 16 (b)	233,000	176,000
Cal. yr. to date	4,470,000	2,866,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.

negotiations between Indiana stripping producers and the union and by the attitude adopted by many large consumers. These buyers, Chicago reports, have let it be known that they will not be interested in offers of coal from mines making separate peace with the union.

Trend of Chicago Market

Prepared sizes of West Virginia smokeless were the most active coals in the Chicago market. Good Pocahontas and New River lump and egg readily sold at $3.25@$3.50. Improvement in high-volatiles was inconsequential and low prices quoted on large blocks of tonnage persist. Western Kentucky slack was easy at $1.60@$1.75, with buyers indifferent. Most industrial plants are relying upon accumulated stockpiles to carry them through the suspension.

Lump and egg are the slowest to move out of the southern Illinois mining fields. Little free screenings and the smaller sizes of nut now are included in the unsold tonnage on tracks at the mines. The situation in the Duquoin and Jackson County field closely parallels that prevailing in southern Illinois proper. Aside from steam coal, movement out of the Mt. Olive district is backward and that from the Standard field draggy.

Weather Helps St. Louis

Rainy weather helped out the local retail market at St. Louis last week. Most of the buying, however, was for small lots and for the lower-priced coals. Yard stocks seem ample to meet all demands, so that there has been no incentive to place restocking orders. Country domestic trade is quiet. Local steam demand is subnormal and country buying for industrial consumption is almost at a standstill.

Quotations on all grades of Kentucky coal except eastern slack have moved up in the Louisville market in the last few days. Producers in the eastern part of the state now ask $2 as a minimum on 4-in. block, but some slack has been thrown on the market as low as $1. Some western Kentucky shippers are demanding a minimum of $1.75 on screenings, mine-run and nut, and $2 on the larger sizes, but coal still can be purchased at $1.60@$1.80 for the steam grades and as low as $1.75 for the domestic sizes.

Embargoes on lake shipments have retarded heavy movement of eastern Kentucky to the lower ports, but the slack appears to have been taken up by scattered all-rail orders from the Central West. Michigan and Chicago territory are drawing freely upon western Kentucky production and output from that section has been going up from 6,294 cars the week ended April 2 to 7,802 cars the week ended April 16.

Dock Trade Bullish

Sentiment at the Head of the Lakes has turned bullish as the result of the belief that large Northwestern consumers will endeavor to cover their re-

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	Apr.26, 1926	Apr.11, 1927	Apr.18, 1927	Apr.25, 1927†
Smokeless lump	Columbus	$2.60	$2.60	$3.10	$3.00@$3.25
Smokeless mine-run	Columbus	1.90	2.10	2.10	2.00@ 2.25
Smokeless screenings	Columbus	1.20	1.60	1.50	*1.35@ 1.60*
Smokeless lump	Chicago	2.60	2.85	3.25	**3.25@ 3.50**
Smokeless mine-run	Chicago	1.80	2.10	2.00	1.75@ 2.25
Smokeless lump	Cincinnati	2.75	2.85	3.00	**3.00@ 3.25**
Smokeless mine-run	Cincinnati	1.85	2.10	2.10	**2.25@ 2.50**
Smokeless screenings	Cincinnati	1.35	1.90	1.90	*1.75@ 2.00*
*Smokeless mine-run	Boston	4.10	4.35	4.30	**4.35@ 4.60**
Clearfield mine-run	Boston	1.85	1.80	1.80	*1.65@ 1.90*
Cambria mine-run	Boston	2.15	2.00	2.00	1.85@ 2.15
Somerset mine-run	Boston	1.95	2.00	1.90	*1.75@ 2.00*
Pool 1 (Navy Standard)	New York	2.65	3.00	2.85	2.75@ 3.00
Pool 1 (Navy Standard)	Philadelphia	2.80	2.95	2.85	2.75@ 3.00
Pool 1 (Navy Standard)	Baltimore	1.95	2.35	2.15	2.10@ 2.25
Pool 9 (Super. Low Vol.)	New York	2.10	2.15	2.10	2.00@ 2.25
Pool 9 (Super. Low Vol.)	Philadelphia	2.35	2.30	2.15	2.00@ 2.30
Pool 9 (Super. Low Vol.)	Baltimore	1.75	1.90	1.80	1.75@ 1.85
Pool 10 (H.Gr.Low Vol.)	New York	1.85	1.75	1.75	1.65@ 1.90
Pool 10 (H.Gr.Low Vol.)	Philadelphia	2.05	2.00	1.80	1.70@ 1.90
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.60	1.85	1.65	1.60@ 1.70
Pool 11 (Low Vol.)	New York	1.60	1.65	1.60	1.50@ 1.75
Pool 11 (Low Vol.)	Philadelphia	1.70	1.65	1.65	1.55@ 1.75
Pool 11 (Low Vol.)	Baltimore	1.45	1.65	1.55	1.55@ 1.60
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.45	1.50	1.50	1.40@ 1.60
Pool 54-64 (Gas and St.)	Philadelphia	1.45	1.45	1.45	1.35@ 1.60
Pool 54-64 (Gas and St.)	Baltimore	1.25	1.55	1.50	1.45@ 1.55
Pittsburgh sc'd gas	Pittsburgh	2.30	2.55	2.55	2.50@ 2.60
Pittsburgh gas mine-run	Pittsburgh	2.05	2.20	2.30	2.25@ 2.35
Pittsburgh mine-run (St.)	Pittsburgh	1.95	2.15	2.25	2.25
Pittsburgh slack (Gas)	Pittsburgh	1.55	1.70	1.65	1.60@ 1.75
Kanawha lump	Columbus	2.05	2.05	2.10	1.85@ 2.35
Kanawha mine-run	Columbus	1.55	1.55	1.55	1.40@ 1.75
Kanawha screenings	Columbus	1.05	1.15	1.10	1.00@ 1.25
W. Va. lump	Cincinnati	1.80	2.05	2.10	1.75@ 2.50
W. Va. gas mine-run	Cincinnati	1.50	1.60	1.55	**1.50@ 1.75**
W. Va. steam mine-run	Cincinnati	1.40	1.40	1.35	**1.35@ 1.50**
W. Va. screenings	Cincinnati	1.00	1.30	1.25	1.00@ 1.50
Hocking lump	Columbus	2.35	2.25	2.25	2.00@ 2.50
Hocking mine-run	Columbus	1.55	1.65	1.65	1.60@ 1.75
Hocking screenings	Columbus	1.15	1.35	1.15	1.10@ 1.25
Pitts. No. 8 lump	Cleveland	2.20	2.35	‡	‡
Pitts. No. 8 mine-run	Cleveland	1.80	1.90	‡	‡
Pitts. No. 8 screenings	Cleveland	1.40	1.55	‡	‡

Midwest	Market Quoted	Apr.26, 1926	Apr.11, 1927	Apr.18, 1927	Apr.25, 1927†
Franklin, Ill. lump	Chicago	$2.60	$3.15	$3.15	$3.15
Franklin, Ill. mine-run	Chicago	2.40	2.60	2.60	2.50@ 2.57
Franklin, Ill. screenings	Chicago	1.90	2.50	2.50	2.50
Central, Ill. lump	Chicago	2.30	2.85	2.85	2.75@ 3.00
Central, Ill. mine-run	Chicago	2.05	2.35	2.35	2.25@ 2.50
Central, Ill screenings	Chicago	1.50	2.00	2.00	2.00
Ind. 4th Vein lump	Chicago	2.40	3.05	3.05	3.00@ 3.15
Ind. 4th Vein mine-run	Chicago	2.15	2.45	2.45	2.40@ 2.50
Ind. 4th Vein screenings	Chicago	1.80	2.50	2.50	2.50
Ind. 5th Vein lump	Chicago	2.15	2.50	2.65	2.60@ 2.75
Ind. 5th Vein mine-run	Chicago	1.95	2.15	2.15	**2.10@ 2.35**
Ind. 5th Vein screenings	Chicago	1.35	2.10	2.10	2.00@ 2.25
Mt. Olive lump	St. Louis	2.50	3.00	3.00	3.00
Mt. Olive mine-run	St. Louis	2.15	3.00	3.00	3.00
Mt. Olive screenings	St. Louis	1.40	2.00	2.00	2.00
Standard lump	St. Louis	2.50	2.75	2.75	2.75
Standard mine-run	St. Louis	1.80	2.00	2.00	2.00
Standard screenings	St. Louis	1.15	1.75	1.75	1.75
West Ky. block	Louisville	1.75	1.85	1.85	1.75@ 2.00
West Ky. mine-run	Louisville	1.25	1.60	1.60	**1.60@ 1.75**
West Ky. screenings	Louisville	1.05	1.60	1.60	**1.60@ 1.75**
West Ky. block	Chicago	1.75	2.00	2.00	**1.85@ 2.25**
West Ky. mine-run	Chicago	1.15	1.60	1.60	**1.60@ 1.75**
South and Southwest					
Big Seam lump	Birmingham	2.00	2.00	2.00	1.75@ 2.25
Big Seam mine-run	Birmingham	2.00	1.75	1.75	1.50@ 2.00
Big Seam (washed)	Birmingham	2.00	2.00	2.00	1.75@ 2.25
S. E Ky. block	Chicago	2.25	2.25	2.25	2.00@ 2.50
S. E. Ky. mine-run	Chicago	1.65	1.65	1.65	1.60@ 1.75
S. E. Ky. block	Louisville	2.00	2.00	2.00	**2.00@ 2.50**
S. E. Ky. mine-run	Louisville	1.50	1.60	1.60	1.50@ 1.75
S. E. Ky screenings	Louisville	1.05	1.45	1.35	*1.00@ 1.35*
S. E. Ky. block	Cincinnati	2.10	2.25	2.35	2.00@ 2.75
S. E. Ky. mine-run	Cincinnati	1.55	1.60	1.55	1.25@ 1.85
S. E. Ky. screenings	Cincinnati	1.05	1.30	1.25	1.00@ 1.50
Kansas lump	Kansas City	4.25	4.35	4.35	4.25@ 4.50
Kansas mine-run	Kansas City	2.85	2.85	2.85	2.75@ 3.00
Kansas screenings	Kansas City	2.50	2.50	2.50	2.50

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in **heavy type**; declines in *italics*.
‡Quotations withdrawn because of strike.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	April 26, 1926 Independent	April 26, 1926 Company	April 18, 1927 Independent	April 18, 1927 Company	April 25, 1927† Independent	April 25, 1927† Company
Broken	New York	$2.34	.....	$8.15@$9.25	.....	$8.25@$8.35	.....	$8.25@$8.35
Broken	Philadelphia	2.39	$9.25	9.00@ 9.25	.....	8.25@ 8.50	.....	8.25@ 8.50
Egg	New York	2.34	9.25@ 9.50	8.75@ 9.25	$8.00@$8.35	8.25@ 8.35	**$8.00@$8.40**	8.25@ 8.35
Egg	Philadelphia	2.39	9.25@ 9.85	9.15@ 9.25	8.25@ 9.00	8.25@ 8.35	8.25@ 9.00	8.25@ 8.35
Egg	Chicago*	5.06	8.48	8.13	7.63	7.63	7.63	7.63
Stove	New York	2.34	9.25@ 9.75	9.25@ 9.50	8.50@ 8.85	8.75@ 8.85	8.50@ 8.85	8.75@ 8.85
Stove	Philadelphia	2.39	9.60@10.00	9.35@ 9.50	8.85@ 9.50	8.85	8.85@ 9.50	8.85
Stove	Chicago*	5.06	8.84	8.33@ 8.58	8.08	8.08	8.08	8.08
Chestnut	New York	2.34	9.25@ 9.50	8.75@ 9.15	8.00@ 8.35	8.25@ 8.35	8.00@ 8.35	8.25@ 8.35
Chestnut	Philadelphia	2.39	9.25@ 9.75	9.00@ 9.15	8.25@ 9.00	8.25@ 8.35	8.25@ 9.00	8.25@ 8.35
Chestnut	Chicago*	5.06	8.71	8.38@ 8.58	7.63	7.63	7.63	7.63
Pea	New York	2.22	6.50@ 7.00	6.00@ 6.35	6.00@ 6.50	6.00@ 6.50	*5.75@ 6.50*	6.00@ 6.50
Pea	Philadelphia	2.14	6.50@ 7.00	6.00@ 6.50	6.00@ 6.75	6.00	6.00@ 6.75	6.00
Pea	Chicago*	4.79	6.03	5.65@ 5.80	6.10	6.10	6.10	6.10
Buckwheat No. 1	New York	2.22	1.75@ 2.25	3.00@ 3.50	2.75@ 3.00	2.50@ 3.00‡	2.75@ 3.00	2.50@3.00‡
Buckwheat No. 1	Philadelphia	2.14	2.25@ 2.75	3.00	2.50@ 3.00	2.50	2.50@ 3.00	2.50
Rice	New York	2.22	1.50@ 1.85	2.00@ 2.25	1.85@ 2.00	2.00@ 2.25	*1.75@ 2.00*	2.00@ 2.25
Rice	Philadelphia	2.14	2.00@ 2.25	2.25	2.00@ 2.75	2.00@ 2.25	2.00@ 2.75	2.00@ 2.25
Barley	New York	2.22	1.10@ 1.40	1.60@ 1.75	1.15@ 1.50	1.50@ 1.75	1.15@ 1.50	1.50@ 1.75
Barley	Philadelphia	2.14	1.50@ 1.60	1.75	1.50@ 1.75	1.50	1.50@ 1.75	1.50
Birdseye	New York	2.22	1.00@ 1.50	2.00	1.35@ 1.60	.....	1.35@ 1.60	.....

*Net tons, f.o.b. mines. † Advances over previous week shown in **heavy type**; declines in *italics*. ‡Domestic buckwheat (D L. & W.), $3.50

quirements early in the season. New dock schedules, announced April 20, show reductions of 25 to 50c. under recent quotations. Smokeless prepared coals are $7.50; mine-run, $5.50, and screenings, $4.75; Kentucky lump, egg and stove, $6.25@$7; dock-run, $5.75; screenings, $4.75; Hocking lump, egg and stove, $5.75; dock-run, $5.25; screenings, $4.50; Youghiogheny and splint lump and egg, $5.75; stove, $5.50; dock-run, $5.25; screenings, $4.50.

Anthracite prices were cut 50c. several days ago. Buying, however, has not developed the strength that was hoped. Sales departments nevertheless are sanguine that demand over the year will be larger than it was the season just closed. Reports from retail dealers over the Northwest indicate that many householders who deserted hard coal the past two years will return to anthracite. A special effort will be made to maintain ample dock stocks throughout the season. The carry-over this season approximated 300,000 tons.

The first cargo of the season was docked on April 17. The Head of the Lakes is looking forward to a heavy movement from the lower ports for the next six weeks. It is estimated that the territory served by the Northwestern docks will need 9,000,000 tons of bituminous coal and 900,000 tons of anthracite to care for its requirements. Some apprehension is voiced over all-rail competition on West Virginia coal at the Twin Cities.

Cold weather added a little zest to the retail business at the Twin Cities last week and encouraged some early ordering of hard coal by the domestic consumers. Smokeless also was in better demand. The steam side of the market was featureless. Pocahontas led in demand in the Milwaukee trade last week. Other grades of coal attracted only passing attention. A steady movement from the lower lake ports has set in and cargoes arriving are given prompt discharge. Prices are unchanged.

Summer Schedules Announced

Although most of the Spadra field is down for lack of orders, June prices from open-shop operations in Arkansas have been announced. Egg, furnace and range are quoted at $6, a reduction of 50c. from the figure of last year; No. 4 coal is $7.75, a cut of 25c.; chestnut is unchanged at $4.50@$5. In view of the unsettled market conditions and the suspension at the unionized mines, no drive for business is being made by Kansas or Oklahoma. Nominal quotations are unchanged.

Demand for Colorado domestic lump continues fairly good and there is an unusual call for nut coal. Steam sizes also move freely and slack is up to $1.75@$2.25. Slack from the Kemmerer-Rock Springs district also is stronger and prices have been moved up to $1.35@$1.75. The Wyoming field is sharing in the weather stimulus given to the domestic trade.

The weather also is responsible for keeping Utah demand at a higher level than prevailed this time last year. Steam business, however, does not participate in the improvement and the free tonnage of slack is greater than that on the market a year ago. Some of the operators have been compelled to dump coal on the ground. The mines of the state are averaging 50 per cent running time. Prices have not been changed.

Slower Movement Stiffens Market

A slowing up in transportation south of the Ohio River has served as a safety valve for the Cincinnati market by relieving the pressure of unsold tonnage. Smokeless coals lead in current trading, with prepared sizes winning new firmness. Lump has been strong at $3@$3.25; egg has sold at $3 and up and mine-run has moved up to $2.25@$2.50. Largely because byproduct oven purchases have been reduced, slack has weakened and some coal has sold down to $1.75.

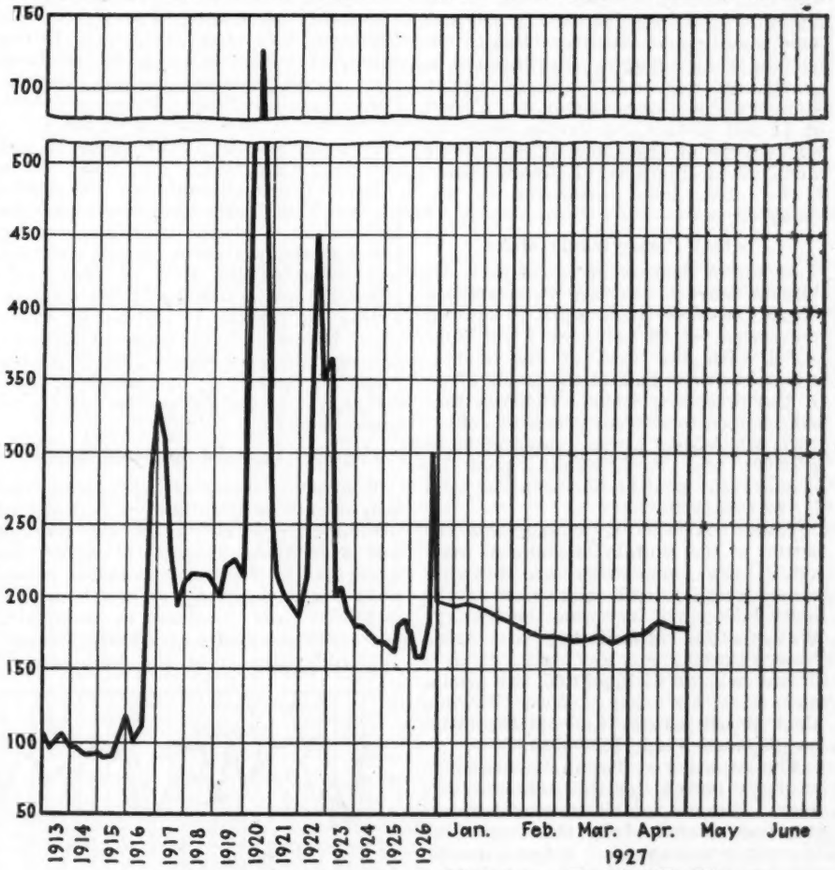
There is a stronger undertone to the domestic market for high-volatile coals although the price spread does not fully reflect the improvement. A number of West Virginia shippers now ask $2.50 as a minimum on 4- and 6-in. lump and $2.25 on egg. Mine-run, both steam and gas, has picked up, but there still is some low-priced slack seeking a market. Little is to be had as low as $1, however. Retail prices at Cincinnati are firmer.

There was another decrease—this time only 55 cars—in the number of coal loads interchanged through the Cincinnati gateway last week. The total of 13,828 cars, however, was 3,653 cars greater than the movement a year ago. Included in last week's total were 2,380 cars en route to the lakes. The number of empties en route to the mines dropped from 13,936 to 13,347 cars. Empties to the Louisville & Nashville increased 921 over the preceding week, but movement to the Chesapeake & Ohio was off 1,346 cars.

Ohio Consumers Indifferent

Consumers in northern and central Ohio still view the suspension of the majority of the mines in that state with boredom. Aside from non-union lake tonnage there is little coal movement through the Toledo or Columbus gateways. Both steam and domestic business is quiet. Some householders, it is true, are taking in their winter's supply, but there is nothing unusual in this and this buying movement has not spread. Steam coal stockpiles are large.

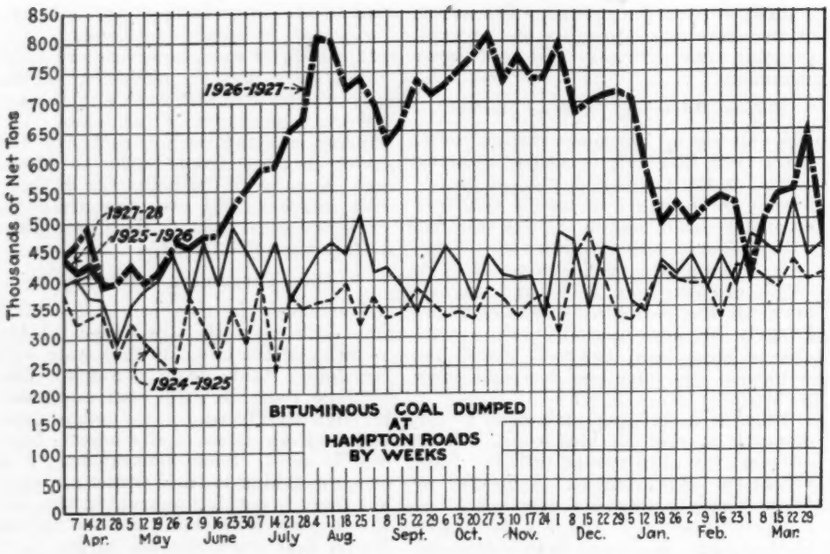
Industrial buying in the Cleveland market is light. Stripping operations in the No. 8 field are offering mine-run at about $1.50 and the Moundsville district is quoting $1.90@$2.75 on lump, $1.85@$1.90 on mine-run and $1.40@$1.50 on screenings. Some distress coal



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1927				1926	1925
	Apr. 25	Apr. 18	Apr. 11	Apr. 4	Apr. 26	Apr. 27
Index	174	174	178	172	159	162
Weighted average price	$2.11	$2.11	$2.15	$2.09	$1.93	$1.96

This diagram shows the relative, not the actual, price on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportion each of slack, prepared and run of mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board. Owing to the suspension of operations in certain unionized fields the figures for April 11, and April 18 and April 25 are *tentative* only.



Car Loadings and Supply

	Cars Loaded—All Cars	Cars Loaded—Coal Cars
Week ended April 9, 1927	959,474	152,876
Week ended April 2, 1927	992,745	175,176
Week ended April 10, 1926	929,506	163,897
Week ended April 3, 1926	928,092	156,909

	Surplus Cars—All Cars	Surplus Cars—Coal Cars	Car Shortage—All Cars	Car Shortage—Coal Cars
April 8, 1927	254,095	80,309	.....	.....
March 31, 1927	248,477	68,417	.....	.....
April 8, 1926	274,219	127,084	.....	.....

still is available. Retail yards are reducing their stocks. Most of the buying from this source is for smokeless lump, which is commanding a premium of 25c. over circular quotations.

If anything, the Pittsburgh market was still weaker the past week. Even non-union gas coal was hard to sell and some good grade Westmoreland three-quarter lump brought only $2.25 on a yearly contract. A block of Upper Monongahela three-quarter lump sold at $2 and some Connellsville mine-run was offered at the same figure. Fairmont steam lump is $1.55 and slack, $1.25. The labor situation is unchanged.

Central Pennsylvania Quiet

An air of depression hangs over the Altoona market. Central Pennsylvania output the week ended April 16 showed a decrease of 30 per cent when compared with the first of the month. Prices, however, held at the levels given in the preceding issue. Distress tonnage helped to depress prices at Johnstown, where pool 1 was quoted at $2.40 @$2.60; pool 9, $2@$2.15; pool 10, $1.65@$1.80; pool 11, $1.50@$1.70; pool 71, $2.15@$2.35.

There has been no change for the better in the Buffalo bituminous market. Large consumers are drawing upon stockpiles and congestion at the lower lake ports increases the tonnage available for all-rail buyers. Aside from Youghiogheny gas slack, which is firmly held at $1.55@$1.65, all grades and sizes are easy. West Virginia slack is offered at $1.35@$1.45; Pittsburgh steam slack, $1.40@$1.50.

The situation at Toronto is described as about normal for this season of the year. Demand for bituminous coal has not been increased by the suspension in certain union fields. A few domestic consumers are putting in supplies of anthracite for next winter and there are the usual number of small orders whenever the weather turns cold. Retail yard stocks of all coals seem ample for current demand.

Dullness in New England

Extreme dullness characterizes the New England steam coal market. There is little spot inquiry and most of the tonnage coming forward is on annual contracts. Practically all the Hampton Roads agencies have coal at the piers and the range in quotations is widening. The most favored selections of No. 1 Navy Standard command $4.50@$4.60 per gross ton, f.o.b. vessels, but other coal is offered as low as $4.35.

On cars at Boston, Providence and Portland for inland shipment, prices swing between $5.75 and $5.90. Demand for all-rail shipments from central Pennsylvania is light. Prices are close to the cost of production, with the highest grades bringing little above $2 per net ton f.o.b. mines.

Lack of demand again was noticeable in the New York bituminous market last week. Many consumers have failed to renew their contracts and this has increased the flow of free coal, although production has been waning. Prices on central Pennsylvania offerings, however, have been well maintained. Shippers expect little improvement before July 1; by that time, they figure, stockpiles will be low enough to cause concern.

Contract Tonnage Supports Market

Contract customers are about the only ones willing to take in coal at the present time in the Philadelphia market and even these consumers display no eagerness in the matter. Prices nominally are unchanged, but how long this condition will continue is uncertain. Low-volatile coals are more draggy than offerings from the high-volatile fields. There is a fair amount of local business up for contract in the office and apartment house line.

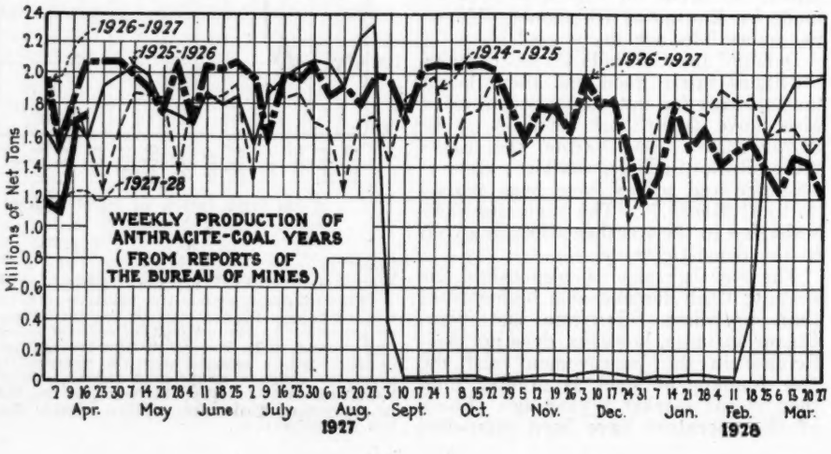
The dullness which set in following the end of the British strike still hangs over the Baltimore market. Few contracts have been closed, as industrial purchasing agents seem content to rely upon the open market to meet any requirements. Keen competition in selling, even on the highest grade coals, keeps prices low and discourages any new stocking movement on the part of consumers. The export side of the trade is dead.

No real improvement has come to the Birmingham district market. Spot steam buying is on a hand-to-mouth basis. Floods in the Mississippi Valley have cut into the normal movement of coal. Shipments against contracts are below the levels of the first quarter of the year. Spot domestic business is restricted in volume and tonnage booked by the retailers is less than a year ago. Most of the Alabama mines are operating three days a week, but captive mines are running five and six days. Coke demand is easier.

Better Demand for Anthracite

Coal-burning weather and fill-up buying combined to increase activity in the New York anthracite market last week. Most independent coals were quoted at or near company circular. The larger producers were in a comfortable position with respect to general orders. Chestnut was the laggard of the domestic family; egg and stove moved more readily and pea was steady. Demand for No. 1 buckwheat is strong. The situation on rice and barley is uneven; some shippers are out of the market; others have a surplus of these sizes.

A foretaste of summer at Philadelphia hit the local anthracite market a hard blow last week. Pea continued in good demand and some distributors were willing to pay a premium of 25c.



for immediate shipment. Other domestic sizes were slow. Retail prices are unsettled. Under reduced running schedules at the mines no trouble is experienced in moving the output of steam sizes, with No. 1 buckwheat in demand for both steam and domestic use.

Baltimore retailers are engaged in an intensive drive for business and are seeking to invade their competitors' territory. Demand is slowly increasing. Local trade in anthracite at Buffalo is quiet. Lake movement, which began April 15, is active. During the first week navigation was open 69,100 tons were cleared for Milwaukee, Chicago and the Head of the Lakes. Vessel rates probably will be fixed at last season's figures of 40c. to Duluth and 50c. to Milwaukee.

Connellsville Coke Drags

Offerings of spot Connellsville coke are a drug on the market. Sharp concessions have been made to move coke suitable only for domestic heating. Standard furnace coke in fair-sized lots sold down to $3.15 last week, while odd carloads brought up to $3.35. Foundry coke is easier, but quotations still remain at $4.25@$4.75. There is little or no market for raw coal despite low prices named.

Production of beehive coke in the Connellsville and Lower Connellsville region during the week ended April 16 was 133,830 net tons, according to the Connellsville *Courier*. During the corresponding week in 1926 the output was 175,500 tons. Furnace-oven production the week ended April 16 was 69,100 tons, or a decrease of 8,000 tons when compared with the output for the week preceding. Merchant-oven production was 64,730 tons, a decrease of 3,020 tons.

Will Confer on Leadership And Its Development

"What Is Leadership" and "How Are Leaders Being Developed?" will be discussed at the Washington conference of the Personnel Research Federation and the spring meeting of the Taylor Society, to be held jointly at the national capital May 9 and 10. Sessions will be held at the National Research Council, Twenty-first and B Sts., and headquarters will be at the Hotel Powhatan.

Ordway Tead of the New York School of Social Work will define and analyze the topic "What Is Leadership?" at the opening session. "Traits Common in All Situations" will the subject of a paper by W. C. Cowley of the University of Chicago, and General M. B. Stewart, superintendent of the West Point Military Academy, will read a paper on "The Army's Contribution to the Understanding of Leadership and Its Development."

A symposium on "How Are Leaders Being Developed?" is scheduled for the afternoon session of May 9, at which Morris L. Cooke, consulting engineer, Philadelphia, and president of the Taylor Society, will preside. Among those who will take part in the discussion are M. J. Kane, engineering department, American Telephone & Telegraph Co., and Bert M. Jewell of the American Federation of Labor. This session will be followed by a dinner meeting at which Herbert Hoover, Secretary of Commerce, is expected to preside.

"Measuring Morale and Leadership Ability" will be the subject of discussion at the opening session of the second day. Howard Coonley, president of the Walworth Co., Boston, and president of the Personnel Research Federation, will be chairman, and H. J. McCorkle of the White Motor Co. will be among the speakers. There also will be a session on research.

Policy of Federal Trade Commission Unchanged By Decision in Claire Furnace Case

The Federal Trade Commission views the decision of the Supreme Court in the Claire Furnace case as leaving the Commission in precisely the same position in which it has stood for the past six years —with the same complete uncertainty as to its own legal powers, which the act creating the Commission purports to confer to compel the submission of reports and the production of books and papers of private business corporations.

The comment of members of the Commission on the decision is to the effect that it decides nothing and throws no light whatever on the issue involved in the suit and the attitude of the court. The court simply ruled that the proceedings instituted by the Claire Furnace Company to enjoin the Commission from demanding its records were prematurely instituted; that the Commission's defense should be instituted only when and if proceedings were brought by the Department of Justice to compel compliance with the Commission's orders. It is now disclosed that such mandamus proceedings were in fact instituted by the Attorney General in the U. S. District Court in Philadelphia in June, 1920, and have been in abeyance ever since, awaiting the outcome of the injunction suit.

The Federal Trade Commission now expects that the mandamus suit will move forward and that in the course of several years it will reach a final decision in the Supreme Court and settle the dispute as to the powers of the Commission, which all parties concerned had expected to be settled in the present decision.

There will be no change in the present policy of the Commission as a result of the Claire Furnace decision in dealing with the question of obtaining information and reports from private corporations in connection with the Commission's various investigations. This was unequivocally asserted by a member of the Commission.

The Commission will continue to seek to obtain information not as a matter of right but as a matter of courtesy. When the information is refused no resort to mandamus, no attempt to invoke the penalties which the law provides, is contemplated until the Supreme Court finally decides the issue. The present Trade Commission policy in this respect is characterized by the members as one of "co-operation rather than coercion" in dealing with corporations.

Trade Commission Blocked In Bread and Flour Case

The U. S. Supreme Court on April 25 blocked an effort to expedite final decision on a case involving the right of the Federal Trade Commission to compel the attendance of witnesses and the production of documents in cases which do not involve charges of unfair methods of competition. A writ of certiorari was refused.

In asking the Supreme Court to grant the writ, the Commission sought to get an early decision of the issues involved in the proceedings brought against it by the Millers' National Federation and various flour corporations. The effect is to leave the case pending for settlement before the District of Columbia Court of Appeals.

As the result of a Senate resolution adopted in 1924 directing the Commission to ascertain and report on costs, prices and profits in the sale and distribution of flour and bread and the extent of price fixing, the Commission sought information from the Millers' Federation and some of its individual members. Access to certain books was refused, whereupon the Commission sought to require attendance of certain witnesses by subpoenas and the production of certain documents which were specified.

The Federation and the other respondents alleged that the Commission had no authority to use compulsory methods excepting under Section 5 of the Federal Trade Commission act whereas it was proceeding in this case under Section 9, relating to general inquiries. It also was alleged that if power to compel such production of documents and attendance of witnesses extended to Section 9, the act was unconstitutional.

Application was made to the District of Columbia Supreme Court for an injunction, and a temporary injunction was issued. The Commission appealed to the District of Columbia Court of Appeals, which has not acted on the matter, but in order to obtain a final determination earlier if possible, it also sought a direct appeal to the U. S. Supreme Court; this latter being refused, the case continues in its status before the District of Columbia Court of Appeals.

Foreign Market And Export News

French Coal Demand Weak; Stocks Accumulate

Paris, France, April 14.—There has been little change in the French coal market situation during the past week. Industrial demand is slackening as the pace at which manufacturing is conducted slows down. But coal production has not been curtailed sufficiently to offset the decrease in demand. As a result pithead stockpiles are accumulating at a dangerous rate although the situation here is not as serious as that prevailing in Belgium at the present time.

In the Centre collieries are faced with sharp competition not only from Great Britain but also from the Sarre. Trainloads of coal from the latter region are moving into St. Etienne. Holland is actively seeking business for anthracitic coals in the Paris metropolitan district. German competition in this direction, while not quiescent, seems less firmly grounded.

André Tardieu, Minister of Public Works, in a speech yesterday, further expanded his program for increasing consumption of native fuel. As the first step in his plan approval has been given to the creation of an interdepartmental committee to take the work in hand. M. Tardieu has been appointed president of the committee. The personnel will include representatives of the large public consuming interests.

French production the first two months of 1927 was 9,080,000 metric tons of coal. On this basis, production for the year probably will be between 54,000,000 and 55,000,000 tons. These figures are exclusive of the output of the Sarre, which has been running around 2,500,000 tons the first two months. Of this, approximately 500,000 tons monthly has been delivered to France.

With an estimated consumptive demand of coal, coke and patent fuels of 80,000,000 tons for the year, this means that France will have to import 19,000,000 tons from other countries. As a matter of fact, imports during January and February were at the rate of 25,000,000 tons per annum. This means, therefore, that one of the first steps in the new campaign will be an attempt to lop off at least 6,000,000 tons from the annual imports.

During March Ruhr deliveries of indemnity fuel to the Strasbourg area were 181,300 tons of coal and 1,600 tons of coke.

Soft-Coal Exports Increase

Exports of bituminous coal from the United States in March showed an increase of 24,323 gross tons over February totals. The largest increase was in shipments to Canada. Exports to northern Europe declined sharply. Anthracite and coke movements also fell somewhat below the February figures.

Exports, in gross tons, by countries were as follows in March, 1927:

To	Anthracite	Bituminous	Coke
France	.....	.....	817
Germany	.....	.....	699
Italy	.....	36,982	.....
Great Britain and No. Ireland	.....	16,598	.....
Portugal	.....	5,057	.....
Canada	145,812	1,060,843	43,911
British Honduras	.....	47	.....
Costa Rica	.....	2	4
Honduras	.....	75	.....
Nicaragua	.....	57	2
Panama and Canal Zone	.....	40,322	.....
Salvador	.....	33	.....
Mexico	3,585	7,364	148
Newfoundland and Labrador	1,904	1,170	.....
Miquelon and St. Pierre Is.	.....	1,846	.....
Barbados	25	3,519	.....
Bermuda	.....	993	.....
Jamaica	.....	14,665	.....
Trinidad and Tobago	.....	8,373	.....
Other British West Indies	.....	5,458	10
Cuba	4,693	54,659	785
Virgin Islands	.....	8,802	.....
Dominican Republic	.....	135	4
Dutch West Indies	.....	10,057	4
French West Indies	.....	15,150	.....
Argentina	.....	29,428	.....
Brazil	.....	48,781	.....
Chile	.....	.....	20
Colombia	5	46	7
British Guiana	.....	2,118	.....
Dutch Guiana	.....	776	.....
Ecuador	.....	.....	37
Venezuela	4	158	.....
Egypt	.....	2,487	.....
Total	156,028	1,376,001	46,438
February, 1927	185,250	1,351,678	59,094

Belgian Trade Still Drags

Brussels, Belgium, April 13.—Weakness still characterizes the wavering Belgian fuel market. During the past few days there has been some improvement in the movement of anthracite coal to France, but this has had no uplifting effect upon trade as a whole. Competition is keen on all sides; stocks are increasing and the downward trend in prices is unchecked.

In a general way producers believe that present costs of production are out of line, but because of the high cost of living believe that it would be an inopportune time to initiate a campaign for a wage reduction. Centralization of sales and an equal division of sales realizations have been suggested in some quarters as an alternative, but such a scheme leaves the question of varying costs as between different collieries unsolved.

Meanwhile mine quotations are on the decline. Current base prices on household grades of 50x60 mm. unscreened coal are 195 fr., as against 200 fr. last month. Semi-bituminous 20x30 mm. coal and anthracite beans have dropped from 265 to 260 fr.; semi-bituminous nuts, from 300 to 290; anthracitic nuts, from 305 to 300; semi-bituminous cobbles, from 285 to 275 fr. Anthracitic cobbles still hold at 190 fr.

In actual trading, however, coal is selling at less than these base prices quoted. Coke, too, is moving freely under the Syndicate figures. Briquets are weak.

Statistics published a few days ago show that Belgium consumed approximately 32,783,000 metric tons of coal, coke and patent fuel last year, as compared with 30,402,000 tons in 1925. Stocks on hand at the beginning of 1926 totaled 1,558,000 tons; production was 25,581,000 tons and imports 11,271,000 tons (7,756,000 tons of coal, 3,392,000 tons of coke and 123,000 tons of briquets). During the year the country exported 3,734,000 tons of coal, 997,000 tons of coke and 726,000 tons of patent fuel. Stocks on hand Dec. 31, 1926, had fallen to 169,000 tons.

Tonnage Tops British Demand

British coal markets last week were quiet, largely because of holidays which closed the collieries longer than usual, according to a cable to the Department of Commerce from Commercial Attaché William L. Cooper, at London.

The supply of coal now is larger than demand, and trade is moving slowly, with prices weak. Production for the week ended April 9 was 5,294,400 gross tons. A slight increase was shown in employment.

Export Clearances of Coal Week Ended April 21

FROM HAMPTON ROADS

	Tons
For Canada:	
Ital. Str. Pallenza, for Three Rivers.	9,024
Ital. Str. Stromboli, for Montreal....	3,580
For Mexico:	
Nor. Str. Dicto, for Santa Rosalio...	4,083
For Brazil:	
Braz. Str. Taubate, for Pernambuco.	5,208
Ital. Str. Pietro Campanela, for Rio Janeiro	7,026
For Martinique:	
Amer. Str. Munalbro, for Fort de France	6,565
For Uruguay:	
Br. Str. African Prince, for Montevideo	3,580
For Trinidad:	
Nor. Str. John Bakke, for Port of Spain	2,609

Hampton Roads Coal Dumpings

(Per Gross Ton)

	Apr. 14	Apr. 21
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week	117,596	135,031
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	136,248	82,408
C. & O. Piers, Newport News:		
Tons dumped for week	127,915	143,294

* Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices

(Per Gross Ton)

PIERS

	April 14	April 21†
Pool 1, New York	$5.40@$5.75	$5.40@$5.75
Pool 9, New York	4.80@ 5.10	**4.80@ 5.25**
Pool 10, New York	4.50@ 4.75	**4.50@ 5.00**
Pool 11, New York	4.25@ 4.50	4.25@ 4.50
Pool 9, Philadelphia	5.00@ 5.15	5.00@ 5.05
Pool 10, Philadelphia	4.75@ 4.95	4.75@ 4.95
Pool 11, Philadelphia	4.40@ 4.50	4.40@ 4.50
Pool 1, Hamp. Roads	4.75	**4.75@ 4.90**
Pool 2, Hamp. Roads	4.55	**4.50@ 4.70**
Pool 3, Hamp. Roads	4.35	*4.15@ 4.25*
Pools 5-6-7, Hamp. Rds.	4.25	4.25

BUNKERS

Pool 1, New York	$5.65@$6.00	$5.65@$6.00
Pool 9, New York	5.05@ 5.35	**5.05@ 5.50**
Pool 10, New York	4.75@ 5.00	**4.75@ 5.25**
Pool 11, New York	4.50@ 4.75	4.50@ 4.75
Pool 9, Philadelphia	5.25@ 5.40	5.25@ 5.40
Pool 10, Philadelphia	5.00@ 5.10	5.00@ 5.10
Pool 11, Philadelphia	4.65@ 4.75	4.65@ 4.75
Pool 1, Hamp. Roads	4.85	**4.90**
Pool 2, Hamp. Roads	4.65	**4.70**
Pools 5-6-7, Hamp. Rds.	4.40	**4.35**

† Advances over previous week shown in **heavy type**; declines in *italics*.

Industrial Notes

The Hunter Machinery Co., Milwaukee, Wis., and Grand Rapids, Mich., has been appointed distributor by the **Climax Engineering Co.**, Clinton, Iowa. **The Belknap Hardware & Manufacturing Co., Louisville, Ky.**, will handle the sales of Climax engines in Kentucky, northern Tennessee, West Virginia and portions of Virginia and North Carolina. **Woodward-Wight & Co., New Orleans,** La., are dealers in Climax engines for southern Louisiana and southern Mississippi.

The Cleveland district offices of **Combustion Engineering Corporation, Ladd Water Tube Boiler Co.** and **Heine Boiler Co.** have been consolidated and will be located at 1107 Guardian Building, with Frank Henderson as district manager of the associated companies.

The Universal Pipe & Radiator Co. and its subsidiaries—the Central Foundry Co., Central Radiator Co., Molby Boiler Co., Essex Foundry and Central Iron & Coal Co.—have leased offices in the Graybar Building, 43d St. and Lexington Ave., New York City.

J. S. Bennett, of the engineering department of the **American Engineering Company**, Philadelphia, Pa., has been selected by the Towne Scientific School of the University of Pennsylvania to deliver a series of lectures on stoker firing as part of a new one-year course in fuel engineering to be inaugurated at the university next autumn.

Sale of the **Marion Steam Shovel Co.**, Marion, Ohio, largest of its kind in the country, to W. A. Harriman & Co., Inc., New York, was announced April 6. The Eastern concern is planning reorganization with a refinancing program, it is said. Present officers of the company will be retained, it was added. The plant is capitalized at $1,000,000.

E. H. Sager, formerly Chicago representative for the Ajax Flexible Coupling Co., recently joined the sales force of **Foote Bros. Gear & Machine Co.**, and is now assigned to territory in the State of Michigan.

New Companies

The Logan County Coal Co., Scranton, Ark., with a capital of $75,000, has been incorporated by R. W. E. Thompson and Donald F. McKenzie.

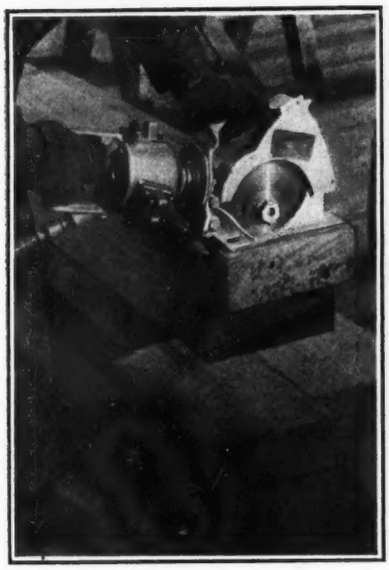
Pittsburgh Coal Co., Inc., Buffalo, N. Y., has been chartered at Albany with $100,000 capital. J. D. A. Morrow, J. B. L. Hornberger and C. E. Lesher, Oliver Bldg., Pittsburgh, Pa., are directors, and H. W. Burmaster, M. M. Pedlow and T. F. Donohue, West Albany, N. Y., are subscribers.

The Banner Fuel Corporation, of Dante, Va., with capital stock of from $5,000 to $50,000, has been chartered to prospect and explore lands for coal, ores and minerals of all kinds, and to mine and deal in them. The officers are S. G. McCarty, president; Horace McCarty, secretary, both of Coeburn, Va.; Walter H. Robertson, H. H. Haynes, Jr., and J. W. Flannagan, Jr.

New Equipment

Air-Driven Portable Hand-Saw Time and Labor Saver

An automatic portable hand-saw, operated by compressed air and doing five times the work of an ordinary saw in the hands of a workman, has been devised by the Ingersoll-Rand Co., 11 Broadway, New York. This saw, now being sold to railroads, building contractors, lumber yards, shipping rooms of manufacturing plants, and other fields of utility, reduces sawing costs from 50 to 75 per cent below the cost by the old hand-saw method.



Portable Air-Driven Saw

By a mere shift of blades, the pneumatic hand-saw may be put to work in sawing wood, soapstone, Bakelite, wallboard, cables, copper, and other materials. Crosscut or rip blades for different types of work are available. The saw cuts timber; does trimming work on buildings and scaffolding; and it is used by railroads in car-repair work. It is as adaptable in its applications as it is economical in operation.

In sawing wood, the portable air-driven hand-saw can be operated twenty times as fast as a workman can ply his saw, and in this, as well as in all other work, it can be operated continuously without fatigue to the operator. Its weight is such that it can be easily carried about and handled by the workman. The 8-in. size weighs only 23 lb.

One outstanding feature of this new air saw is its safeguard against accidents. The design combines the Ingersoll-Rand three-cylinder type of air motor, long in use in I-R grinders and light-weight drills, with the Crowe safety saw guard. This guard has been officially approved by the Ohio Industrial Commission, by the Pennsylvania Department of Labor and Industry, by the New Jersey Department of Labor, and by the Underwriters' Laboratories. The safety guard is of a telescopic nature. It opens when the saw is applied to the material; and it automatically closes and locks in position as the cut is completed. It affords complete protection against accident or damage to the blade.

Concealed Type Bond Applied To Edge of Rail Base

Where conditions are favorable in the mine, a desirable type of bond is one that may be welded to the base of the rail in such a way that it is practically all concealed. The combination of this protection from dragging equipment and derailed cars, with provision for easy welding, has been secured in the new AW-15 copper allow weld bond just announced by the Ohio Brass Co., of Mansfield, Ohio.

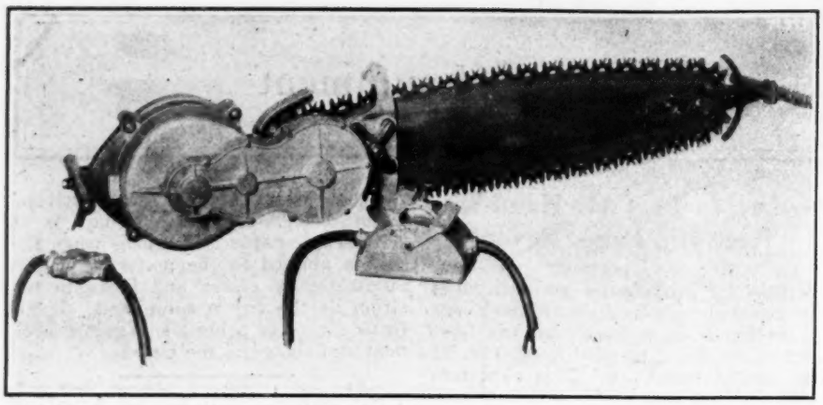
The terminals are a modification of the ones used on this company's type AW-12 bond, which is applied on top of the rail base. The new bond terminals have hooks which engage with the edge of the rail, being designed to grip rails up to 30 lb. In application, the cable takes a position underneath the rail, the only exposed part being the welding area of the terminal. Welding is done with copper alloy rod and the electric arc. Extension of the cable strands well into the terminal assures complete fusion of each strand into the deposited metal.

Being a short bond (7-in. cable), only a few inches of rail at the joint is spanned. Simplified application and a minimum of copper make for a minimum in cost of installation.

Machine Cuts Kerfing Time And Makes Task Easier

Sawing wood may be either good exercise or arduous labor according to the mental attitude or physical condition of those who perform the operation. In mining work where in most cases posts, lagging and the like must be cut to length and to fit underground it usually partakes of the nature of labor. In order to lessen the severity of this work both within the mines and elsewhere the Reed-Prentice Corp., of Worcester, Mass., has recently placed on the market the Wolf sawing machine shown in the accompanying illustration.

As may be seen the active element of this device somewhat resembles the cutter bar of a mining machine and the principle of operation is the same. Naturally, however, the speed of the chain is much higher, so high in fact that it is claimed by the makers that all pitchy and fibrous materials are thrown off by centrifugal force as the chain rounds the sprockets. This machine will therefore cut bark and resinous woods without difficulty. It operates on 220-volt, 60-cycle 3-phase cur-



Supplants Hand Labor

One of the most willing servants man has is electricity. Here is a saw, electrically driven, that is so light that one man can carry it about, yet of such capacity that it will easily cut large timbers accurately and to line. No dogging of the work is necessary.

rent and can be readily carried from place to place by one or two men.

It is claimed by the makers that the machine will cut dimension stock either at right angles or at any skew up to 45 deg.; that it will cut such timber without dogging or fastening; that it cuts smoothly and accurately to line and inasmuch as it requires no stroke room it can be used in confined places where it would be impossible to swing an ordinary cross cut saw. It is also claimed that the time of cutting is reduced to from one-third to one-fourth that necessary with ordinary saws.

Publications Received

Statistics of Railways in the United States for the Year Ended Dec. 31, 1925; the Interstate Commerce Commission, Washington, D. C. Price, 25c. Includes also statistics based on the monthly reports of railways for the year 1926, as well as selected data relating to other common carriers subject to the Interstate Commerce Act for the years 1925 and 1926.

Bureau of Mines Safety Labels, by L. C. Ilsley, Bureau of Mines, Washington, D. C. Information Circular 6005. Price, 5c. Pp. 14; 6x9 in.; illustrated. Tells what the label really stands for.

Investigations of the Preparation and Use of Lignite—1918-1925; by O. P. Hood and W. W. Odell. Bureau of Mines, Washington, D. C. Price, 50c. Bulletin 255. Pp. 204; 6x9 in.; illustrated.

The Pennsylvania State College and Its Service. Annual Reports of the college officers for the years 1925-1926. Pp. 140.

Carnegie Beam Sections. Carnegie Steel Co., Pittsburgh, Pa. Pp. 170; 5x7½ in.; tables. First edition. Contains chapters devoted to profiles and dimensions, elements and properties, beam and column safe loads.

Proceedings of the International Conference on Bituminous Coal. Carnegie Institute of Technology, Pittsburgh, Pa. Price, $7. Pp. 830; 6x9 in.; illustrated. The Williams & Wilkins Co., Baltimore, Md.

Laboratory Methods of Determining the Inflammability of Coal Dusts, by A. L. Godbert. Safety in Mines Research Board. Paper No. 31. Price, 1s. 6d. net. Pp. 68; 6x9 in.; illustrated. H. M. Stationery Office, Adastral House, Kingsway, W.C. 2, London, England. Contains a historical survey of the subject, a review of the influence of various factors on the inflammabilities of dust clouds and a discussion of the relative inflammabilities of coal dusts.

Coal in 1924, by James E. Black, L. Mann and F. G. Tryon. Bureau of Mines, Washington, D. C. Price, 20c. Pp. 130; 6x9 in.

The Anthracite Railroads, by Jules I. Bogen, Ph. D. The Ronald Press Co., New York City. Price, $4.25. Pp. 281; 5½x8½ in. A study in American railroad enterprise.

Getting Results from Safety Work is the title of a booklet containing 15 pp. issued by the Policyholders' Service Bureau of the Metropolitan Life Insurance Co., New York City. The book is addressed to the chief operating official and gives facts and figures showing results obtainable from a successful safety program.

Coming Meetings

Chamber of Commerce of the United States. Annual meeting, May 3-5, at Washington, D. C.

Mine Inspectors' Institute of America. Annual meeting May 3-4-5, Charleston, W. Va. Secretary, C. A. McDowell, P. O. Box 64, Pittsburgh, Pa.

California Retail Fuel Dealers' Association. Fourteenth annual convention, Sacramento, Calif., May 5-7. Chairman of Convention Committee, George Burns, 19th St. between V and W, Sacramento, Calif.

International Railway Fuel Association. Nineteenth annual convention, Hotel Sherman, Chicago, Ill., May 10-13. Secretary, L. G. Plant, Railway Exchange Bldg., Chicago, Ill.

Oregon Coal Dealers' Association. Seventh annual convention, Portland, Ore., May 13 and 14. Secretary, O. F. Tate, Board of Trade Building, Portland, Ore.

American Mining Congress. Annual convention May 16-20, Cincinnati, Ohio. Secretary, J. F. Callbreath, Munsey Bldg., Washington, D. C.

Retail Coal Dealers' Association of Texas. Annual convention, McAlester, Okla., May 19 and 20. Secretary, C. R. Goldman, Dallas, Texas.

American Society of Mechanical Engineers. Spring meeting, May 23-26, at White Sulphur Springs, W. Va. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

National Foreign Trade Convention, Detroit, Mich., May 25-27. Secretary, O. K. Davis, India House, Hanover Square, New York City.

Society of Industrial Engineers. Fourteenth national convention, Hotel Stevens, Chicago, Ill., May 25-27. Executive secretary, E. Van Neff, 17 E. 42d St., New York City.

American Wholesale Coal Association. Annual convention June 1-3, Toronto, Canada. Secretary-treasurer, R. B. Starek, Chicago Temple Bldg., Chicago, Ill.

Pennsylvania Retail Coal Merchants' Association. Annual convention, Wilkes-Barre, Pa., June 1-3. Secretary, W. M. Bertolet, Reading, Pa.

National Retail Coal Merchants Association. Annual convention June 6-8. Detroit, Mich. Resident vice-president, Joseph E. O'Toole, Washington, D. C.

Association of Iron and Steel Electrical Engineers. Annual convention in conjunction with the Iron and Steel Exposition, at Pittsburgh, Pa., June 13-18. Secretary, John F. Kelly, Empire Bldg., Pittsburgh, Pa.

New England Coal Dealers' Association. Annual meeting June 14-16, Hotel Griswold, New London, Conn. Executive secretary, E. I. Clark, Boston.

Colorado and New Mexico Coal Operators Association. Meeting at Boston Building, Denver, Colo., June 15. Secretary, F. O. Sandstrom, Denver, Colo.

National Coal Association. Annual meeting June 15-17, at Edgewater Beach Hotel, Chicago. Executive Secretary, Harry L. Gandy, Washington, D. C.

American Society for Testing Materials. Thirtieth annual meeting, French Lick Springs Hotel, French Lick, Ind., June 20-24. Secretary, C. L. Warwick, 1315 Spruce St., Phila., Pa.

American Institute of Electrical Engineers. Summer convention, June 20-24, at Detroit, Mich. Regional meeting, May 25-27, Pittsfield, Mass. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

Mining Society of Nova Scotia. Annual meeting at Baddeck, Nova Scotia, Canada, June 21-22. Secretary-Treasurer, E. C. Hanrahan, Sydney, N. S., Canada.

Michigan-Ohio-Indiana Coal Association. Annual convention at Cedar Point, Ohio, June 28-30. Secretary, B. F. Nigh, Columbus, Ohio.

Illinois and Wisconsin Retail Coal Dealers' Association. Annual convention, the Hotel Pfister, Milwaukee, Wis., June 28-30. Managing Director, N. H. Kendall, 706 Great Northern Bldg., Chicago, Ill.

International Chamber of Commerce. Fourth congress at Stockholm, Sweden, June 27 to July 2.